



Billing Code 4333-15

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17[Docket No. FWS–R4–ES–2019–0106; FF09E21000 FXES11110900000 201]

RIN 1018–BE10

Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Florida Bonneted Bat

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), propose to designate critical habitat for the Florida bonneted bat (*Eumops floridanus*) under the Endangered Species Act (Act). Approximately 598,261 hectares (ha) (1,478,333 acres (ac)) in portions of 10 Florida counties fall within the boundaries of the proposed critical habitat designation. If we finalize this rule as proposed, it would extend the Act’s protections to this species’ critical habitat. We also announce the availability of a draft economic analysis of the proposed designation.

DATES: We will accept comments on the proposed rule or draft economic analysis that are received or postmarked on or before [**INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER**]. Comments submitted electronically using the Federal eRulemaking Portal (see **ADDRESSES**, below) must be received by 11:59 p.m. Eastern Time on the closing date. We must receive requests for public hearings, in writing, at the address shown in **FOR FURTHER INFORMATION CONTACT** by [**INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER**].

ADDRESSES: *Comment submission:* You may submit comments on the proposed rule or draft

economic analysis by one of the following methods:

(1) *Electronically*: Go to the Federal eRulemaking Portal: <http://www.regulations.gov>.

In the Search box, enter Docket No. FWS–R4–ES–2019–0106, which is the docket number for this rulemaking. Then, click on the Search button. On the resulting page, in the Search panel on the left side of the screen, under the Document Type heading, check the Proposed Rules box to locate this document. You may submit a comment by clicking on “Comment Now!”

(2) *By hard copy*: Submit by U.S. mail to: Public Comments Processing, Attn: FWS–R4–ES–2019–0106, U.S. Fish and Wildlife Service; MS: JAO/1N, 5275 Leesburg Pike, Falls Church, VA 22041–3803.

We request that you send comments only by the methods described above. We will post all comments on <http://www.regulations.gov>. This generally means that we will post any personal information you provide us (see **Information Requested**, below, for more information).

Document availability: The draft economic analysis is available at <http://www.fws.gov/verobeach/>, at <http://www.regulations.gov> at Docket No. FWS–R4–ES–2019–0106, and at the South Florida Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

The coordinates or plot points or both from which the maps are generated for this proposed critical habitat designation are available at <http://www.fws.gov/verobeach/>, at <http://www.regulations.gov> at Docket No. FWS–R4–ES–2019–0106, and at the South Florida Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**). Supporting documents, consisting of supplemental information and details relating to conservation lands, can be found at <http://www.regulations.gov> at Docket No. FWS–R4–ES–

2019–0106. Any additional tools or supporting information that we may develop for this critical habitat designation will also be available at the U.S. Fish and Wildlife Service website and field office listed below, and may also be included in the preamble below and/or at <http://www.regulations.gov>.

FOR FURTHER INFORMATION CONTACT: Roxanna Hinzman, Field Supervisor, U.S. Fish and Wildlife Service, South Florida Ecological Services Field Office, 1339 20th Street, Vero Beach, Florida 32960–3559; telephone 772–562–3909. If you use a telecommunications device for the deaf (TDD), call the Federal Relay Service at 800–877–8339.

SUPPLEMENTARY INFORMATION:

Executive Summary

Why we need to publish a proposed rule. Under the Endangered Species Act of 1973, as amended (“Act”; 16 U.S.C. 1531 et seq.), when we determine that any species is an endangered or threatened species, we are required to designate critical habitat, to the maximum extent prudent and determinable. Designations of critical habitat can only be completed by issuing a rule.

What this document does. This document proposes a designation of critical habitat for the Florida bonneted bat, an endangered species, in portions of 10 Florida counties.

The basis for our action. Under the Act, if we determine that a species is an endangered or threatened species we must, to the maximum extent prudent and determinable, designate critical habitat. Section 4(b)(2) of the Act states that the Secretary shall designate critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, national security impact, and any other relevant impact of specifying any particular area

as critical habitat. The Secretary may exclude an area from critical habitat if he determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless he determines, based on the best scientific data available, that the failure to designate such area will result in the extinction of the species.

Economic analysis. We have prepared a draft analysis of the economic impacts of the proposed critical habitat designation. We are announcing the availability of the draft economic analysis (DEA) with the publication of this proposed rule and are seeking public review and comment on the DEA as well as on the proposed rule.

We are seeking peer review. We are seeking comments from independent specialists to ensure that our critical habitat proposal is based on scientifically sound data and analyses. We have invited these peer reviewers to comment on our specific assumptions and conclusions in this proposed rule.

Uncommon Acronyms Used in this Proposed Rule

For the convenience of the reader, listed below are some of the acronyms used in this proposed rule:

APAFR = Avon Park Air Force Range

BCNP = Big Cypress National Preserve

DoD = Department of Defense

DHS = Department of Homeland Security

ENP = Everglades National Park

FLUCCS = Florida Land Use and Cover Classification System

FNAI = Florida Natural Areas Inventory

FPNWR = Florida Panther National Wildlife Refuge

FSPSP = Fakahatchee Strand Preserve State Park

FWC = Florida Fish and Wildlife Conservation Commission

IEM = incremental effects memorandum

INRMP = integrated natural resources management plan

PBFs = physical or biological features

PSSF = Picayune Strand State Forest

RCW = red-cockaded woodpecker (*Picoides borealis*)

UF = University of Florida

WMA = Wildlife Management Area

Information Requested

We intend that any final action resulting from this proposed rule will be based on the best scientific data available and be as accurate and as effective as possible. Therefore, we request comments or information from other concerned government agencies, the scientific community, industry, or any other interested party concerning this proposed rule. We particularly seek comments concerning:

(1) The reasons why we should or should not designate habitat as “critical habitat” under section 4 of the Act including information to inform the following factors that the regulations identify as reasons why a designation of critical habitat may be not prudent:

(a) The species is threatened by taking or other human activity and identification of critical habitat can be expected to increase the degree of such threat to the species;

(b) The present or threatened destruction, modification, or curtailment of a species' habitat or range is not a threat to the species, or threats to the species' habitat stem solely from causes that cannot be addressed through management actions resulting from consultations under section 7(a)(2) of the Act;

(c) Areas within the jurisdiction of the United States provide no more than negligible conservation value, if any, for a species occurring primarily outside the jurisdiction of the United States; or

(d) No areas meet the definition of critical habitat.

(2) Specific information on:

(a) The amount and distribution of Florida bonneted bat habitat.

(b) What may constitute "physical or biological features essential to the conservation of the species," within the geographical range currently occupied by the Florida bonneted bat.

(c) Where these features are currently found.

(d) Whether any of these features within areas we are proposing as critical habitat may require special management considerations or protection, including managing for the potential effects of climate change.

(e) What areas, that may be considered occupied at the time of listing and that contain the physical or biological features essential to the conservation of the species, should be included in the designation.

(f) Whether occupied areas may be inadequate for the conservation of the species, and if so, we particularly seek comments regarding:

(i) What areas not occupied at the time of listing may be essential for the conservation of the species; and

(ii) Specific information regarding whether such unoccupied areas will, with reasonable certainty, contribute to the conservation of the species and contain at least one physical or biological feature essential to the conservation of the species.

(g) Any additional areas occurring within the range of the species, i.e., south and central Florida, that should be included in the designation because they (1) are occupied at the time of listing and contain the physical and biological features that are essential to the conservation of the species and that may require special management considerations, or (2) are unoccupied at the time of listing and are essential for the conservation of the species.

(h) Whether we have determined the most appropriate size and configuration of our proposed critical habitat units.

(i) Whether any delineated area within the proposed critical habitat appears to be a result of occupancy data associated with artificial structures, and any support for the area's inclusion or omission. (Our analyses were based on habitat requirements, natural roosts, and presence data, and due to the species' large foraging distance, it is unlikely that any areas were included solely due to the presence of an artificial structure; nonetheless, we seek comment on this.)

(j) Whether artificial structures that provide roosting sites, particularly bat houses, and structures that may provide roost sites, such as bridges, may be essential for the conservation of the species and why.

(k) Whether agricultural lands that may provide foraging habitat are essential for the conservation of the species and why.

(3) Land use designations and current or planned activities (e.g., proposed development, wind energy projects, etc.) in the subject areas and their possible impacts on the Florida bonneted bat and proposed critical habitat.

(4) Information on the projected and reasonably likely impacts of climate change on the Florida bonneted bat and proposed critical habitat.

(5) Any probable economic, national security, or other relevant impacts of designating any area that may be included in the final designation, and the related benefits of including or excluding areas that may be impacted.

(6) Information on the extent to which the description of probable economic impacts in the draft economic analysis is a reasonable estimate of the likely economic impacts.

(7) The likelihood of adverse social reactions to the designation of critical habitat and how the consequences of such reactions, if likely to occur, would relate to the conservation and regulatory benefits of the proposed critical habitat designation.

(8) Whether any specific areas we are proposing for critical habitat designation should be considered for exclusion under section 4(b)(2) of the Act, and whether the benefits of potentially excluding any specific area outweigh the benefits of including that area under section 4(b)(2) of the Act. We particularly seek comments regarding lands that could be considered for exclusion based on a conservation program or plan, and why. These may include Federal, Tribal, State, County, local, or private lands with permitted conservation plans covering the species in the area such as habitat conservation plans, safe harbor agreements, or conservation easements, or non-permitted conservation agreements and partnerships that would be encouraged by designation of, or exclusion from, critical habitat. Detailed information regarding these plans, agreements, easements, and partnerships is also requested, including:

(a) The location and size of lands covered by the plan, agreement, easement, or partnership;

(b) The duration of the plan, agreement, easement, or partnership;

- (c) Who holds or manages the land;
- (d) What management activities are conducted;
- (e) What land uses are allowable; and
- (f) If management activities are beneficial to the Florida bonnet bat and its habitat.

(9) Whether we could improve or modify our approach to designating critical habitat in any way to provide for greater public participation and understanding or to better accommodate public concerns and comments.

Because we will consider all comments and information we receive during the comment period, our final designation may differ from this proposal. Based on the new information we receive (and any comments on that new information), our final designation may not include all areas proposed, may include some additional areas, and may exclude some areas if we find the benefits of exclusion outweigh the benefits of inclusion. Such final decisions would be a logical outgrowth of this proposal, as long as: (1) we base the decisions on the best scientific and commercial data available and take into consideration the relevant impacts; (2) we articulate a rational connection between the facts found and the conclusions made, including why we changed our conclusion; and (3) we base removal of any areas on a determination either that the area does not meet the definition of “critical habitat” or that the benefits of excluding the area will outweigh the benefits of including it in the designation. You may submit your comments and materials concerning this proposed rule by one of the methods listed in **ADDRESSES**. We request that you send comments only by the methods described in **ADDRESSES**.

All comments submitted electronically via <http://www.regulations.gov> will be presented on the website in their entirety as submitted. For comments submitted via hard copy, we will post your entire comment—including your personal identifying information—on

<http://www.regulations.gov>. You may request at the top of your document that we withhold personal information such as your street address, phone number, or e-mail address from public review; however, we cannot guarantee that we will be able to do so.

Comments and materials we receive, as well as supporting documentation we used in preparing this proposed rule, will be available for public inspection on <http://www.regulations.gov>, or by appointment, during normal business hours, at the U.S. Fish and Wildlife Service, South Florida Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Previous Federal Actions

Federal actions for the Florida bonneted bat prior to October 4, 2012, are outlined in our proposed listing rule for the bat (77 FR 60750), which was published on that date. On October 2, 2013, after consideration of available scientific information, and peer review and public comments on the proposed listing rule, we published a final rule listing the Florida bonneted bat as an endangered species (78 FR 61004).

Background

Critical habitat is defined in section 3 of the Act as:

- (1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features
 - (a) Essential to the conservation of the species, and
 - (b) Which may require special management considerations or protection; and
- (2) Specific areas outside the geographical area occupied by the species at the time it is

listed, upon a determination that such areas are essential for the conservation of the species.

Conservation, as defined under section 3 of the Act, means to use and the use of all methods and procedures that are necessary to bring an endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking.

Critical habitat receives protection under section 7 of the Act through the requirement that Federal agencies ensure, in consultation with the Service, that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of critical habitat. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation does not allow the government or public to access private lands. Such designation does not require implementation of restoration, recovery, or enhancement measures by non-Federal landowners. Where a landowner requests Federal agency funding or authorization for an action that may affect a listed species or critical habitat, the Federal agency would be required to consult with the Service under section 7(a)(2) of the Act. However, even if the Service were to conclude that the proposed activity would result in destruction or adverse modification of the critical habitat, the Federal action agency and the landowner are not required to abandon the proposed activity, or to restore or recover the species; instead, they must implement “reasonable and prudent alternatives” to avoid destruction or adverse modification of critical habitat.

Under the first prong of the Act’s definition of critical habitat, areas within the

geographical area occupied by the species at the time it was listed are included in a critical habitat designation if they contain physical or biological features (1) which are essential to the conservation of the species and (2) which may require special management considerations or protection. For these areas, critical habitat designations identify, to the extent known using the best scientific and commercial data available, those physical or biological features that are essential to the conservation of the species (such as space, food, cover, and protected habitat). In identifying those physical or biological features that occur in specific occupied areas, we focus on the specific features that are essential to support the life-history needs of the species, including, but not limited to, water characteristics, soil type, geological features, roost sites, prey, vegetation, symbiotic species, or other features. A feature may be a single habitat characteristic, or a more complex combination of habitat characteristics. Features may include habitat characteristics that support ephemeral or dynamic habitat conditions. Features may also be expressed in terms relating to principles of conservation biology, such as patch size, distribution distances, and connectivity.

Under the second prong of the Act's definition of critical habitat, we may designate critical habitat in areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. On August 27, 2019, we published final revised regulations outlining the criteria for designating critical habitat (84 FR 45020). We stated that, when designating critical habitat, the Secretary will first evaluate areas occupied by the species. The Secretary will only consider unoccupied areas to be essential where a critical habitat designation limited to geographical areas occupied by the species would be inadequate to ensure the conservation of the species. In addition, for an unoccupied area to be considered essential, the Secretary must determine that there is a

reasonable certainty both that the area will contribute to the conservation of the species and that the area contains one or more of those physical or biological features essential to the conservation of the species.

Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific data available. Further, our Policy on Information Standards Under the Endangered Species Act (published in the *Federal Register* on July 1, 1994 (59 FR 34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106-554; H.R. 5658)), and our associated Information Quality Guidelines, provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. They require our biologists, to the extent consistent with the Act and with the use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat.

When we are determining which areas should be designated as critical habitat, our primary source of information is generally the information developed during the listing process for the species. Additional information sources may include any generalized conservation strategy, criteria, or outline that may have been developed for the species, the recovery plan for the species, articles in peer-reviewed journals, conservation plans developed by States and counties, scientific status surveys and studies, biological assessments, other unpublished materials, or experts' opinions or personal knowledge.

Habitat is dynamic, and species may move from one area to another over time. We recognize that critical habitat designated at a particular point in time may not include all of the habitat areas that we may later determine are necessary for the recovery of the species. For these reasons, a critical habitat designation does not signal that habitat outside the designated area is

unimportant or may not be needed for recovery of the species. Areas that are important to the conservation of the species, both inside and outside the critical habitat designation, will continue to be subject to: (1) conservation actions implemented under section 7(a)(1) of the Act, (2) regulatory protections afforded by the requirement in section 7(a)(2) of the Act for Federal agencies to ensure their actions are not likely to jeopardize the continued existence of any endangered or threatened species, and (3) section 9 of the Act's prohibitions on taking any individual of the species, including taking caused by actions that affect habitat. Federally funded or permitted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. These protections and conservation tools will continue to contribute to recovery of this species. Similarly, critical habitat designations made on the basis of the best available information at the time of designation will not control the direction and substance of future recovery plans, habitat conservation plans (HCPs), or other species conservation planning efforts if new information available at the time of these planning efforts calls for a different outcome.

Prudency Determination

Section 4(a)(3) of the Act, as amended, and implementing regulations (50 CFR 424.12), require that, to the maximum extent prudent and determinable, the Secretary shall designate critical habitat at the time the species is determined to be an endangered or threatened species. Our regulations (50 CFR 424.12(a)(1)) state that the Secretary may, but is not required to, determine that a designation would not be prudent in the following circumstances:

(i) The species is threatened by taking or other human activity and identification of critical habitat can be expected to increase the degree of such threat to the species;

(ii) The present or threatened destruction, modification, or curtailment of a species' habitat or range is not a threat to the species, or threats to the species' habitat stem solely from causes that cannot be addressed through management actions resulting from consultations under section 7(a)(2) of the Act;

(iii) Areas within the jurisdiction of the United States provide no more than negligible conservation value, if any, for a species occurring primarily outside the jurisdiction of the United States;

(iv) No areas meet the definition of critical habitat; or

(v) The Secretary otherwise determines that designation of critical habitat would not be prudent based on the best scientific data available.

We find that none of the aforementioned factors above apply to the Florida bonneted bat. First, there is currently no imminent threat of take attributed to collection for commercial, recreational, scientific, or educational purposes (see *Factor B*, final listing rule (78 FR 61004, October 2, 2013)). However, humans often consider bats as “nuisance” species and seek their removal when they occur in or around human dwellings or infrastructure (see *Factor D* and *Factor E*, final listing rule (78 FR 61004, October 2, 2013)). The Florida bonneted bat is at risk of take in the form of inadvertent or purposeful removal, displacement, and disturbance wherever it occurs in or near human dwellings or structures (see *Factor D* and *Factor E*, final listing rule (78 FR 61004, October 2, 2013)). Designation of critical habitat could result in an increased threat of taking of individuals in some areas, through publication of maps and a narrative description of specific habitat units in the *Federal Register*. However, this factor is not expected to appreciably increase the degree of threat to the species because it would presumably apply only to individuals under certain circumstances (e.g., where bats are roosting in or near human

dwellings or structures and where humans are intolerant of bat presence) where risks from humans already exist. Therefore, identification and mapping of critical habitat are not expected to initiate new threats or significantly increase existing threats.

Additionally, while some threats to the species' habitat may stem from sea level rise or other effects of climate change that may not be addressed through management actions under section 7(a)(2), the Florida bonneted bat was listed as an endangered species due largely to both historical and ongoing habitat loss and degradation associated with development and agricultural practices. Therefore, actions causing this habitat loss and degradation may include those that can be addressed through management actions resulting from consultations under section 7(a)(2) of the Act (e.g., loss of roost sites and foraging habitat, development associated with human population growth and agriculture; see especially *Factor A* and *Factor E*, final listing rule (78 FR 61004, October 2, 2013)).

Further, this species does not occur outside the United States, in fact its range is restricted to south and central Florida. Specific areas within this range meet the definition of critical habitat (see above), and the best scientific data available indicates a benefit of designating critical habitat.

The potential benefits of designation include: (1) Triggering consultation under section 7 of the Act in new areas for actions in which there may be a Federal nexus where it would not otherwise occur because, for example, it is or has become unoccupied or the occupancy is in question; (2) focusing conservation activities on the most essential features and areas; (3) providing educational benefits to State or county governments or private entities; and (4) reducing the inadvertent harm to the species caused by people.

Therefore, we find designation of critical habitat is prudent for the Florida bonneted bat.

Critical Habitat Determinability

Our regulations at 50 CFR 424.12(a)(2) state that critical habitat is not determinable when one or both of the following situations exist:

- (i) Data sufficient to perform required analyses are lacking, or
- (ii) The biological needs of the species are not sufficiently well known to identify any area that meets the definition of “critical habitat.”

In our proposed listing rule (77 FR 60750, October 4, 2012), we found that critical habitat was not determinable because the biological needs of the species were not sufficiently well known to permit identification of areas as critical habitat. Our final listing rule (78 FR 61004, October 2, 2013), summarized much of the new information and data that had been obtained following publication of the proposed listing rule. We announced that we would continue to work closely with researchers, agencies, and other partners to seek new information about the species and its habitat needs to determine its critical habitat.

Since that time, we have reviewed the available information pertaining to the biological needs of the species and habitat characteristics where the species is located. Substantial new scientific information has been obtained by researchers, agencies, conservation organizations, industry, and other partners. Where information gaps on the Florida bonneted bat remain, we rely on available information on other *Eumops*, other molossids (free-tailed bats), and other comparable bat species. To fulfill the requirements of the Act, we are now proposing the designation of critical habitat for the Florida bonneted bat.

Physical or Biological Features

In accordance with section 3(5)(A)(i) of the Act and regulations at 50 CFR 424.12(b), in determining which areas within the geographical area occupied by the species at the time of listing to designate as critical habitat, we consider the physical or biological features (PBFs) that are essential to the conservation of the species and which may require special management considerations or protection. The regulations at 50 CFR 424.02 define “physical or biological features essential to the conservation of the species” as the features that occur in specific areas and that are essential to support the life-history needs of the species, including, but not limited to, water characteristics, soil type, geological features, sites, prey, vegetation, symbiotic species, or other features. A feature may be a single habitat characteristic, or a more complex combination of habitat characteristics. Features may include habitat characteristics that support ephemeral or dynamic habitat conditions. Features may also be expressed in terms relating to principles of conservation biology, such as patch size, distribution distances, and connectivity.

For example, physical features might include gravel of a particular size required for spawning, alkali soil for seed germination, protective cover for migration, or susceptibility to flooding or fire that maintains necessary early-successional habitat characteristics. Biological features might include prey species, forage grasses, specific kinds or ages of trees for roosting or nesting, symbiotic fungi, or a particular level of nonnative species consistent with conservation needs of the listed species. The features may also be combinations of habitat characteristics and may encompass the relationship between characteristics or the necessary amount of a characteristic needed to support the life history of the species. In considering whether features are essential to the conservation of the species, the Service may consider an appropriate quality, quantity, and spatial and temporal arrangement of habitat characteristics in the context of the life-history needs, condition, and status of the species. These characteristics include, but are not

limited to, space for individual and population growth and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, or rearing (or development) of offspring; and habitats that are protected from disturbance.

In general, important and basic components of bat conservation include: protection of roosting habitat; protection of foraging habitat; and protection of the prey base (Humphrey 1975, pp. 321–346; Fenton 1997, entire; Pierson 1998, pp. 309–325; O’Donnell 2001, entire; Agosta 2002, pp. 188–193; Sparks *et al.* 2005, entire; Knight and Jones 2009, entire; Hagen and Sabo 2011, p. 759). Both the amount and spatial distribution of roosting and foraging habitat likely influence the survival and reproduction of Florida bonneted bats. Successful dispersal is likely essential to maintaining genetic and demographic connections among populations across the range of the species.

The ecology and long-term habitat requirements of the Florida bonneted bat are not fully understood (Robson 1989, p. 2; Robson *et al.* 1989, p. 81; Belwood 1992, p. 219; Timm and Genoways 2004, p. 859; Braun de Torrez *et al.* 2016, p. 240; 2018, p. 1121; Ober *et al.* 2016, p. 1; Bailey *et al.* 2017a, entire). Habitat for the bat mainly consists of foraging areas and roosting sites, including artificial structures. As of May 2019, researchers had found 19 natural roost sites in live trees and snags and determined that 6 roost trees had fallen or were too damaged for future use by bats, 3 were confirmed active, 3 were inactive, and 7 were unknown (Braun de Torrez, pers. comm. 2019a). Only very limited information on historical sites is available. Recent information on habitat has been obtained largely through: acoustical surveys, designed to detect and record bat echolocation calls; limited tracking using radio-transmitters, GPS satellite tags, and other techniques; and other studies (e.g., guano (excrement) analysis) (see *Life History*

and *Habitat*, final listing rule (78 FR 61004, October 2, 2013)).

The Florida bonneted bat uses forests and a variety of other natural and developed areas, within south, southwest, and south-central Florida (see *Life History*, *Habitat*, and table 1, final listing rule (78 FR 61004, October 2, 2013)). They have been recorded in a wide array of habitat types, including: pine flatwoods, pine rocklands, cypress, hardwood hammocks, mangroves, wetlands, rivers, lakes, ponds, canals, other natural areas, rural and agriculture lands, including groves, tropical gardens, crop-based agriculture; as well as residential and urban areas (Arwood, pers. comm., 2008a–b, 2012a, 2013a–c, 2014a–d; Marks and Marks 2008a, pp. 13–14; 2008b, pp. 2–5; 2008c, pp. 1–28; 2012, pp. 1–22; Smith 2010, entire; Snow, pers. comm., 2011a–b, 2012a–g, 2013; *in litt.* 2012; Owen, pers. comm., 2012; Rau, pers. comm. 2012; Maehr 2013, entire; Maehr, pers. comm., 2013a–b; Relish, pers. comm., 2013; Ridgley, pers. comm., 2013a–d; 2014a–c; Scofield, pers. comm., 2013a–f; Smith, pers. comm., 2013; Ober 2015, p. 3; Braun de Torrez, pers. comm., 2015a; Braun de Torrez *et al.* 2016, entire; Bailey *et al.* 2017a, entire). Florida bonneted bats at Big Cypress National Park (BCNP) are generally more active near places with permanent open water (Arwood, pers. comm., 2013c). At Florida Panther National Wildlife Refuge (FPNWR), the species uses forested areas, open water, and wetlands (Maehr 2013, entire).

We used a series of Geographical Information Systems (GIS) analyses to examine all available location data associated with Florida bonneted bat presences from 2003 through 2014 (i.e., confirmed recorded call data (taken through acoustical devices), audible call data (heard by experts), and occupied bat houses) and land use/land coverages to better understand habitat use as described in the PBF discussion below (see also *Habitat Analyses* under **Criteria Used to Identify Critical Habitat**, below). Examining land coverages within 1.6 km (1 mi) around all

confirmed presences suggested that wetland forest (35 percent), open freshwater wetland (16 percent), and wet shrub (11 percent) were the predominant habitat types used. A similar analysis using presence data from natural areas only and examining land covers within this same distance suggested that wetland forest (40 percent), open freshwater wetland (18 percent), wet shrub (13 percent), upland forest (11 percent), and upland shrub (5 percent) were the predominant habitat types used. Examination of habitat use in separate geographical regions (i.e., west, southwest, southeast, and north-central Florida) reinforced the finding that forests are important habitat types, but suggested differences between geographic regions. For example, Florida bonneted bats may rely on wetland forests for roosting habitat in Collier County, but may rely on more upland forests for roosting in Charlotte County, where conditions are generally drier. Analysis of land covers within 1.6 km (1 mi) of the first known natural roost site (at Avon Park Air Force Range in Polk County) suggested that upland forest (61 percent) and upland shrub (30 percent) were key land cover types for roosting.

The analyses of land cover use described above were conducted shortly after the species' listing. New presence data, collected after these analyses through 2019, were found to be consistent with these earlier results.

Space for Individual and Population Growth and for Normal Behavior

At the time of listing, core areas for the Florida bonneted bat were identified that included areas with consistent use by, or repeated detections of, the species and thereby assumed to possess characteristics fundamental to the species' ecology and be important for conservation and recovery (see detailed discussion under Core Areas in the final listing rule (78 FR 61004, October 2, 2013)). These areas, representing the most important sites for the bat known at the

time, are located within Charlotte, Lee, Collier, Monroe, and Miami-Dade Counties. Polk and Okeechobee Counties were also identified in the final listing rule as being occupied, but were not considered core areas, primarily because we lacked adequate survey information at the time. We now consider Polk County to be a core area based on several roost sites discovered at APAFR after listing (see *Cover or Shelter*, below; Angell and Thompson 2015, entire; Webb, pers. comm. 2018b; Myers, pers. comm. 2018a). New survey and life history information further support the identification of these core areas as those that are important for conservation and recovery of the Florida bonneted bat. We also identified these areas as important to the species in its recovery outline (a precursor to a recovery plan) (Service 2019, p. 2). Conservation of bat habitat within these core areas is necessary to ensure the species maintains sufficient resiliency, redundancy, and representation. As such, we consider suitable habitat within these core areas (i.e., Polk, Charlotte, Lee, Collier, Monroe, and Miami-Dade Counties) to be essential to the conservation of the Florida bonneted bat.

The Florida bonneted bat needs suitable roosting habitat (for shelter, to rear young, for protection from predators) with limited disturbance, suitable foraging habitat, sufficient prey base (to meet its daily and seasonal dietary requirements and energy demands), and opportunities to disperse, exchange information, find mates, and reproduce for population growth. While much has been learned since listing about the species' roosting preferences, foraging behavior, habitat affinities, dispersal capabilities, and home ranges, not all aspects of these are clearly understood. In the largest and most comprehensive acoustic study undertaken for this species, bonneted bats were detected in all land cover types investigated, including the four major categories of uplands, wetlands, agricultural, and developed lands (Bailey *et al.* 2017a, entire).

In an analysis of land cover types within 1.6 km (1 mi) of the first four roosts discovered,

we found high percentages of forested habitats around each of the four roost sites examined. As indicated above, land covers surrounding the roost site at APAFR in Polk County comprise 61 percent upland forest and 30 percent upland shrub. In Collier County, land cover types surrounding the roost at Fakahatchee Strand Preserve State Park (FSPSP) are 97 percent wetland forest and 2 percent wetland shrub. Those surrounding the BCNP roost are 49 percent upland forest, 36 percent wetland forest, 11 percent wetland shrub, and 4 percent freshwater wetlands. Similarly, land cover types surrounding the FPNWR roost comprise 48 percent upland forest, 47 percent wetland forest, 3 percent open freshwater wetlands, and 2 percent shrub. Using this information regarding land cover types associated with roost sites, we identified specific habitat types within these cover types that are essential to the conservation of the Florida bonneted bat.

In natural areas, wetland and upland forests, open freshwater wetlands, wetland and upland shrub, and open water appear to be key habitat types. Natural areas provide better overall habitat (e.g., adequate foraging habitat, less disturbance, more opportunities to disperse) than urban areas, and limited information suggests the species uses forested areas for roosting in natural habitats (see *Cover or Shelter*, below). In general, open freshwater and wetlands, and other open natural habitats provide prime foraging areas for bats, providing important sources of water, concentrations of prey, and conditions and structure for finding and capturing prey. Bonneted bats use a “hawking” foraging method (i.e., pursue and catch prey in flight), and are capable of traveling at fast speeds due to their specialized wing morphology. Molossids generally incur high metabolic costs while hunting aerial insects and are less suited for maneuvering in more confined spaces due to their long and narrow wings; efficient foraging may be restricted to open spaces, shortly after sunset when numbers of high-flying insects are sufficiently high (Voigt and Holderied 2012, pp. 415, 423). Consequently, this species relies on

speed and agility to catch target insects in the absence of background clutter, such as dense vegetation (Simmons *et al.* 1979, entire; Belwood 1992, p. 221; Best *et al.* 1997, p. 5; Voigt and Holderied 2012, entire). Foraging in open spaces, bonneted bats use echolocation to detect prey at relatively long range and high above the ground (Belwood 1992, p. 221; Best *et al.* 1997, p. 5; Marks and Marks 2008a, p. 5; Mora and Torres 2008, p. 7). Due to the species' physiology, we have identified open areas of freshwater and natural habitats as a feature essential to the conservation of this bat.

Limited data (i.e., from three bats, tracked for three nights each) indicated that bonneted bats generally stayed within 1.6 km (1 mi) of the bat houses on Babcock-Webb Wildlife Management Area (WMA) but had longer foraging bouts each evening, ranging from 2.4 to 11.3 km (1.5 to 7 mi) (Braun de Torrez, pers. comm. 2015a; Ober 2015, p. 3). While at the time of listing, foraging and dispersal distances and home range sizes for the Florida bonneted bat had not been studied in great detail (Gillies, *in litt.* 2012; G. Marks, pers. comm. 2012; Ober, *in litt.* 2012; Gore, pers. comm. 2013), additional studies have provided valuable insights (Ober 2016, entire; Webb, pers. comm. 2018a–b). The Florida bonneted bat flies considerable distances; individuals foraged far (39 km (24 mi) maximum) from capture sites and covered long distances in one night (91 km (56 mi) maximum) (Ober 2016, p. 3; Webb, pers. comm. 2018a–b). Given this, it seems likely that foraging areas may be located fairly long distances from roost sites (Ober, *in litt.* 2012). Further, the finding of only a few call sequences with substantial effort in close proximity to one known occupied active natural roost also suggests that bonneted bats may travel substantial distances from roosts and have very large home ranges. This finding aligns with relative sizes of home ranges of comparable and related species (Vaughan 1959, p. 18; Marques *et al.* 2004, entire; Corbett *et al.* 2008, entire; Rhodes and Catterall 2008, entire;

Bonaccorso 2010, p. 11; Koob 2012, p. 2; Noer *et al.* 2012, entire; Ober, pers. comm. 2013).

Based upon these characteristics and data, bonneted bats are expected to routinely range long distances, up to 24 km (15 mi) or more on foraging bouts, similar to the Underwood's mastiff bat (*E. underwoodi*) in Arizona (Tibbitts *et al.* 2002, p. 11; Gore, pers. comm. 2013).

Consequently, we consider divergent areas for foraging and roosting as essential to the conservation of this bat.

Dispersal is important for bats for inbreeding avoidance, exploiting available resources, and maintaining a persisting population through changing landscapes. This aspect of their life history is particularly difficult to study, as the species is generally secretive, flies, and is nocturnal (Petit and Mayer 1999, p. 1717). Evidence of temporary emigration and disappearance of juveniles after 8 months suggests Florida bonneted bats disperse from natal roosts (Bailey *et al.* 2017b, p. 556). More research on the bat's specific needs during dispersal is needed; however, geographic distance and ecological barriers (i.e., habitat fragmentation) are generally known to limit population expansion and gene flow within and among populations, and can block species movement required to adjust to environmental and habitat changes due to the dynamic nature of ecological systems, as well as habitat loss and climate change (Hilty *et al.* 2006, pp. 108–112). Consequently, we consider connectivity of suitable habitat necessary for natural and adaptive movements and thereby essential to the conservation of this species.

Food, Water, Air, Light, Minerals, or Other Nutritional or Physiological Requirements

The Florida bonneted bat's precise foraging habits and long-term requirements are unknown (Belwood 1992, p. 219). However, active year-round and aseasonally polyestrous (i.e., having more than one period of estrous in a year, not restricted to one season) (Timm and

Genoways 2004, p. 859; Marks and Marks 2008a, p. 9; Ober *et al.* 2016, entire), the Florida bonneted bat likely needs constant sources and/or multiple sources of prey to support its high metabolism. Energy demands of the bonneted bat probably fluctuate seasonally (e.g., assumed higher demands during cold weather as it does not have periods of torpor (a state of decreased physiological activity in an animal, including decreased body temperature, heart rate, and metabolism)) and during sensitive times (e.g., maternity, nursery, supporting offspring). The maternity season is a time of particular sensitivity, with increased energy demands and risks as females leave young in roosts while making multiple foraging excursions to support lactation (Kurta *et al.* 1989a, entire; Kurta *et al.* 1990, entire; Kunz *et al.* 1995, entire; Marks and Marks 2008a, pp. 8–9; Ober *et al.* 2016, entire). Exploitation of insects in patches that yield high-energy returns for pregnancy and lactation is important (Kunz *et al.* 1995, p. 412). Reduced insect populations in urban areas may make it difficult for females to successfully raise offspring to maturity (Kurta *et al.* 1990, entire; Kurta and Teramino 1992, p. 260).

Most insectivorous bats eat large quantities of insects (Ross 1967, entire; Black 1974, entire; Kunz 1974, entire; Kunz *et al.* 1995, entire; Kurta and Whitaker 1998, entire; Lee and McCracken 2002, pp. 306–313; 2005, entire; Leelapaibul *et al.* 2005, entire; Kunz *et al.* 2011, entire). Insectivorous bat activity and diversity are strongly correlated with arthropod abundance (Racey and Swift 1985, pp. 210–211, 214; Wickramasinghe *et al.* 2004, entire; Wickramasinghe *et al.* 2003, pp. 987–992), suggesting that bats seek out areas of concentrated prey sources (Kunz *et al.* 2011, p. 5). Foraging behavior is tied in part to insect abundance, availability, and density (Anthony and Kunz 1977, entire; Racey and Swift 1985, p. 212; Wickramasinghe *et al.* 2003, pp. 987–992; Wickramasinghe *et al.* 2004, entire). Exploitation of insects in patches that yield high-energy returns appears to be important for meeting the energy needs associated with prolonged

flights as well as pregnancy and lactation (Kunz *et al.* 1995, p. 412). In general, bats foraging from continuous flight must encounter prey at relatively high rates and successfully attack many individual items (Fenton 1990, p. 416). Since Florida bonneted bats are thought to employ this feeding strategy, areas with higher insect abundance, more (multiple) prey sources, and diverse natural habitats that produce prey diversity are essential for suitable foraging habitat.

Like other molossids (e.g., Brazilian free-tailed bats (*Tadarida brasiliensis*)), the species may be a generalist predator, capable of opportunistically exploiting available resources (McCracken *et al.* 2012, entire). Limited information from guano analyses indicates Florida bonneted bats feed on flying insects of the following orders: Coleoptera (beetles), Diptera (flies), Hemiptera (true bugs), Lepidoptera (moths), and Trichoptera (caddisflies) (Belwood 1981, p. 412; 1992, p. 220; Marks 2013, entire; Marks and Marks 2015, pp. 2–3). Like other large molossids, the Florida bonneted bat's physiological characteristics (e.g., large size, broad jaws, big teeth, large ears) and lower-frequency echolocation make it well-equipped for finding and taking relatively larger insects and harder prey items (Freeman 1979, entire; 1981, pp. 166–173; Obrist *et al.* 1993, entire; Aguirre *et al.* 2003, p. 207; Timm and Genoways 2004, pp. 855–857; Mora and Torres 2008, p. 12).

It is not clear if insect availability is limiting or sufficient; however, if the Florida bonneted bat is similar in its needs to other insectivorous bats, then reduced prey abundance or density could negatively affect the species, affecting survival, growth, and reproduction. We find that foraging habitat sufficient to support insect populations and the seasonal nutritional needs of the bat are essential to its conservation. Protecting natural habitats conducive to insect diversity (Marks 2013, p. 2) is also essential to the Florida bonneted bat's survival.

Sources of drinking water are important for most insectivorous bat species (Kurta *et al.* 1989b, entire; 1990, pp. 59, 63; Adams and Hayes 2008, pp. 1, 6). Water sources and wetlands also provide important sources and concentrations of prey (Belwood and Fenton 1976, entire; Swift and Racey 1983, entire; Barclay 1991, pp. 174–176; Brigham *et al.* 1992, entire; Sullivan *et al.* 1993, entire; Racey *et al.* 1998, pp. 200–201; Russo and Jones 2003, pp. 197, 201; Nam *et al.* 2012, p. 1095; Wickramasinghe *et al.* 2004, p. 1289; Fukui *et al.* 2006, entire).

Water sources (for drinking, prey, and structure) are important habitat components for the Florida bonneted bat. This species forages over ponds, streams, and wetlands and drink when flying over open water (Marks and Marks 2008c, p. 4; 2008d, p. 3). For example, in BCNP the vast majority of Florida bonneted bat calls were recorded in 2014 at one remote pond surrounded by wetland forest (Arwood, pers. comm. 2014a–c). At Picayune Strand State Forest (PSSF), all sites where the species has been detected were located near canals (Smith, pers. comm. 2013). At FPNWR, the highest detection of Florida bonneted bat calls occurred in areas with the largest amount of open water (Maehr 2013, pp. 7–11; Maehr, pers. comm. 2013a–c). In the Miami area (Richmond pine rocklands (Zoo Miami, Larry and Penny Thompson Park, and the Martinez Preserve)), the species has been detected in a variety of habitat types, but peak activity occurred in areas of artificial freshwater lakes adjacent to intact pine rocklands (Ridgley, pers. comm. 2013a–d).

We find that open water and wetlands provide drinking water, open foraging areas, and concentrations of prey that are essential to the conservation of the species. During dry seasons, bats become more dependent on remaining ponds, streams, and wetland areas for foraging purposes, making these precious resources essential (Marks and Marks 2008c, p. 4; 2008d, p. 3). Because the Florida bonneted bat, like other *Eumops*, appears to be confined to foraging in open

spaces due to its wing morphology (Norberg and Rayner 1987, pp. 399–400; Voigt and Holderied 2012, entire), larger water bodies and more open wetlands in general may be better foraging habitat, structurally, than smaller, more confined areas.

The Florida bonneted bat's physiological or behavioral responses to abiotic factors, such as climate and artificial lighting, have not been specifically studied. Needs and requirements may be similar to those for other insectivorous species in semitropical or temperate environments. Light levels (and other environmental factors) trigger, in part, both the activity of bats and insects. Of factors influencing times of emergence in temperate bats, the overwhelming conclusion has been that light is the most important factor (Kunz 1974, p. 707). Artificial lighting (i.e., ecological light pollution) can have demonstrable effects on behavioral and population ecology of organisms, including bats and insects (Longcore and Rich 2004, pp. 193–195; see *Factor E, Ecological Light Pollution*, final listing rule (78 FR 61004, October 2, 2013)). Therefore, we find that natural habitats that are largely devoid of artificial lighting are likely most conducive to bonneted bat conservation.

Similarly, temperature requirements and tolerances for the Florida bonneted bat are not fully understood. The species is active year-round and considered semi-tropical (Ober *et al.* 2016, entire). Bailey *et al.* (2017a, p. 1589) detected bonneted bats at the northern portion of their study area (i.e., Polk and Osceola Counties) and suggested future surveys in additional counties to help determine the limit of the northern extent of the range. They found low probabilities of occurrence of bonneted bats in areas where historical mean minimum temperatures dropped below 15 degrees Celsius (°C) (59 degrees Fahrenheit (°F)) and suggested that the species may be limited to southern Florida due to temperature (Bailey *et al.* 2017a, p. 1591). At this time, the most northern known roost sites are located at APAFR and vicinity

(Angell and Thompson 2015, entire; Webb, pers. comm., 2018b; Myers, pers. comm., 2018a). Mean monthly temperatures at this location range from 15 to 28 °C (60–83 °F), with an average low of 8.3 °C (47 °F) (January) and an average high of 33.9 °C (93 °F) (July). Prolonged cold temperatures resulted in bonneted bat mortalities at one known colony site in North Fort Myers, Florida, during a severe cold snap in 2010 (Trokey, pers. comm. 2010a–b; 2012a) (see also *Factor E*, final listing rule (78 FR 61004, October 2, 2013)). Limited data at survey sites in south Florida indicated reduced bat activity under conditions of lower ambient temperatures (Arwood, pers. comm. 2014e). In general, molossids that inhabit the warmer temperate and subtropical zones incur much higher energetic costs for thermoregulation during cold weather events than those inhabiting northern regions (Arlettaz *et al.* 2000, pp. 1004–1014; see also *Factor E*, final listing rule (78 FR 61004, October 2, 2013)). As a result, we recognize the species’ requirement of subtropical climate conditions for its long-term persistence.

This species is suspected to seasonally vary its use of the northern and southern extent of its known range. This may relate to temperature sensitivity (as described above), different nutritional needs during peak reproductive seasons, or changes in prey availability. Florida bonneted bat detection is positively influenced by Julian date and minimum temperature of the survey night; thus, future monitoring efforts should be focused on warm nights later in the spring to maximize detection probabilities (Bailey *et al.* 2017a, pp. 1589, 1591). Florida bonneted bats were also “more common in areas with higher historical mean annual rainfall but seemed to prefer areas with lower rainfall during the spring” (Bailey *et al.* 2017a, p. 1591). The authors concluded that higher detection probabilities observed were likely a result of increased insect abundance due to increased temperatures, humidity, and precipitation influencing the bats’ activity (Bailey *et al.* 2017a, p. 1591). Therefore, we find that seasonal differences and these

other climatological conditions, in addition to temperature, likely influence the species' distribution, habitat requirements, and foraging opportunities, thereby affecting its conservation. Differences in these environmental conditions may occur seasonally or on finer temporal scales.

Cover or Shelter

Bats spend over half their lives within their roost environments (Kunz 1982, p. 1). Roosting sites for bats generally include both day and night roosts, and sites for various uses (e.g., seasonal, maternity, nursery, bachelor roosts). Roosts provide sites for resting, digestion of food, social interaction, mating, rearing of young, as well as providing microclimate stability, protection from predators, and protection from sunlight and adverse weather (Kunz 1982, entire; Ormsbee *et al.* 2007, pp. 130–135; Marks and Marks 2008c, p. 4; Dechmann *et al.* 2010, pp. 1–7) (see also *Sites for Breeding, Reproduction, or Rearing (or Development) of Offspring*, below). In addition, roosts function as areas where information is shared among colony members for many species of bats (e.g., the velvety free-tailed bat (*Molossus molossus*), see Dechmann *et al.* 2010, entire; Bohn, *in litt.* 2012).

The availability of suitable roosts is an important limiting factor for most bat species (Humphrey 1975, pp. 341–343). Suitable natural roost sites in south Florida appear limited, and competition for available tree cavities among native and non-native wildlife may be greater now than historically (see *Factor E, Competition for Tree Cavities*, final listing rule (78 FR 61004, October 2, 2013); also Belwood 1992, p. 220; Kern, Jr., *in litt.* 2012; Ludlow, *in litt.* 2012). Consequently, retaining suitable roost structures (trees and snags with cavities or loose bark) throughout the species' range is fundamental to this species' conservation (Braun de Torrez *et al.*

2016, p. 240). Specifically, more roost structures may be needed to support dispersing subadult males (Ober *et al.* 2016, p. 7).

Bats in south Florida roost primarily in trees and human-made structures (Marks and Marks 2008a, p. 8). Bonneted bats are closely associated with forested areas because of their tree-roosting habits, and old, mature trees are considered essential roosting sites (Robson 1989, p. 2; Belwood 1992, p. 220; Eger 1999, p. 132). However, specific information concerning roost sites was limited at the time of listing (see *Use of Forests and Other Natural Areas, Habitat, and Life History*, final listing rule (78 FR 61004, October 2, 2013)). One of the few historical roost sites used by a small colony of Florida bonneted bats was a longleaf pine (*Pinus palustris*) cavity that had been excavated by a red-cockaded woodpecker (RCW) (*Picoides borealis*) and later enlarged by a pileated woodpecker (*Dryocopus pileatus*); the cavity was 4.6 meters (m) (15.1 feet (ft)) above the ground (Belwood 1981, p. 412).

More recent information suggests that the Florida bonneted bat may prefer large pines (live and dead) with woodpecker activity for potential roosting, at least in some areas (Braun de Torrez, pers. comm. 2019b; Webb, pers. comm. 2017a). However, other large, tall trees with suitable structure (e.g., hollows, loose bark) may also be suitable. The species has also been reported to use leaf shafts of royal palm (*Roystonea regia*) (Belwood 1992, p. 219) and rocky crevices and outcrops on the ground (Timm and Genoways 2004, p. 860; see *Habitat*, final listing rule (78 FR 61004, October 2, 2013)). Similar roosting habitats (i.e., use of tree cavities, foliage of palms, crevices) have been reported for closely related species in other areas (Robson 1989, p. 2; Belwood 1992, pp. 219–220).

Since the species was listed in 2013, a total of 19 natural roosts have been located, of which 12 were found in pines (Angell and Thompson 2015, entire; Webb, pers. comm. 2017a;

Braun de Torrez, pers. comm. 2019b). As of May 2019, of the 19 roosts found, 6 have fallen or are too damaged to house bats; however, we have used data collected from all known natural roosts to identify common essential features (e.g., tree height, tree size, cavity height, tree species) (Scofield, pers. comm. 2013g–i; Angell and Thompson 2015, p. 185; Braun de Torrez, pers. comm. 2015b, 2016, 2019a–b; Braun de Torrez et al. 2016, p. 239; Hershberger, pers. comm. 2017; Webb, pers. comm. 2017a; Aldredge, pers. comm. 2018; Miller, pers. comm. 2018; Pitcher, pers. comm. 2019). Based on these natural roosts, Florida bonneted bats appear to roost in trees greater than 10 m (33 ft) in height, greater than 20 cm (8 in) diameter at breast height, with cavities greater than 5 m (16 ft) high off the ground (Braun de Torrez, pers. comm. 2019c).

The Florida bonneted bat also uses non-natural environments for roosting (see *Use of Parks, Residential Areas, and other Urban Areas*, final listing rule (78 FR 61004, October 2, 2013)) and artificial structures, particularly bat houses (Marks and Marks 2008a, p. 8; Morse 2008, entire; Trokey, pers. comm. 2012a–b; see *Use of Artificial Structures (Bat Houses)*, final listing rule (78 FR 61004, October 2, 2013)). Many of the known active roosting sites for the species are bat houses (two at a private residence in Lee County; three to seven separate roosts at Babcock-Webb WMA in Charlotte County; seven at or near Zoo Miami in Miami-Dade County) (Myers, pers. comm. 2013a–b, 2014a–d; 2015; Gore, pers. comm. 2017, 2018; Ridgley, pers. comm. 2019).

Bonneted bats have also been found roosting in abandoned and occupied human dwellings in Miami-Dade County (Bohn, pers. comm. 2014; Zambrano, pers. comm. 2015; Hosein and Salazar 2017, entire). In 2017, several roosts were found by tracking tagged bonneted bats; all of these were located in abandoned and occupied houses in urban Miami (Webb, pers. comm. 2017b–e). Another roost was found by tracking a bonneted bat back to a

50–60-ft high utility pole in Polk County (Webb, pers. comm. 2017a). Historically, bonneted bats had been documented to use buildings and barrel tile roofs (Jennings 1958, p. 102; Belwood 1992, pp. 219–220). In Coral Gables, tracked bonneted bats were using utility poles, chimneys, pine trees, and royal palms, but were not found using barrel tile roosts in limited observations (Gore *et al.* 2015, entire). Particularly in urban and suburban areas (see Use of Parks, Residential Areas, and other Urban Areas, final listing rule (78 FR 61004, October 2, 2013)), the Florida bonneted bat may use bridges, buildings, rock crevices, and other structures resembling natural molossid roosts (Wilkins 1989, pp. 5–6; Milner *et al.* 1990, p. 3; Best *et al.* 1996, p. 5; Best *et al.* 1997, p. 4; Keeley and Tuttle 1999, pp. 9, 28; Avila-Flores and Fenton 2005, entire; Marks and Marks, pers. comm. 2008; Gore *et al.* 2015).

More research on the role of bat houses in the conservation of the species is needed (Florida Fish and Wildlife Conservation Commission (FWC) 2013, pp. 11–12). The use of such structures by the Florida bonneted bat may be beneficial in some locations, especially where cavity trees are limiting. However, artificial structures may not be sufficient replacements for natural roosts (e.g., existing dead or hollow trees) due to site fidelity and specific roosting requirements (Ormsbee *et al.* 2007, p. 145). Artificial structures may be more likely to be disturbed, may be more prone to vandalism, and may or may not be maintained.

The Florida bonneted bat is suspected to have high roost site fidelity. For example, one natural roost at APAFR remained active (with some periods of inactivity, once due to a nesting northern flicker taking over the cavity) for more than 5 years (Scofield, pers. comm. 2013g–h; 2014a–b; Angell and Thompson 2015, p. 186; Myers, pers. comm. 2018b, Aldredge, pers. comm. 2019a). Several bat houses at Babcock-Webb WMA have been occupied by bonneted bats since 2008 (Myers, pers. comm. 2013a), and a roost in an abandoned house remained active

for 20 years (likely with some periods of inactivity), even after an exclusion was conducted (Bohn, pers. comm. 2014; Hosein, pers. comm. 2016; Webb, pers. comm. 2017d; Gore *et al.* 2015, p. 183). The loss of a roost site may cause greater hardship to this species than the loss of a roost site for other, less site-faithful species (Ober, *in litt.* 2012).

Roost sites are clearly vital resources for this species, and the protection of natural and artificial roost sites in natural areas is essential. Due to the dynamic nature of ecological processes (e.g., growth and regeneration of forests), forests of different age-classes are needed to ensure that the bat continues to have sufficient roost sites over time. In forested and other natural areas, old, large, mature trees (live or dead) with cavities, hollows, or loose bark provide important natural roosts. Known active roosts include several artificial structures (bat houses), but their capacity to perform all functions of natural roosts is unknown. Therefore, we find that the characteristics and features of natural roost sites are essential for Florida bonneted bat conservation.

Sites for Breeding, Reproduction, or Rearing (or Development) of Offspring

As with other aspects of Florida bonneted bat biology, precise site requirements and habitat conditions for successful reproduction and growth are not fully understood. Most natural behaviors related to breeding, reproduction, and carrying for young occur within the Florida bonneted bats' roosts. Optimal roosting habitat depends upon suitable structures (e.g., tree cavities and hollows) (see *Cover or Shelter*, above), but it is at least partly tied to other factors, such as position in the landscape (e.g., nearby foraging habitat, water sources) (see *Space for Individual and Population Growth and for Normal Behavior*, above). Access to sufficient

foraging habitat is also critical for the rearing of young (Marks and Marks 2008c, p. 4; see *Food, Water, Air, Light, Minerals, or Other Nutritional or Physiological Requirements*, above).

Sites supporting the Florida bonneted bats' breeding activities appear to be required year-round (Timm and Genoways 2004, p. 859; Ober *et al.* 2016, p. 8; Bailey *et al.* 2017b, p. 556; see *Life History*, final listing rule (78 FR 61004, October 2, 2013); see *Food, Water, Air, Light, Minerals, or Other Nutritional or Physiological Requirements*, above). Adults are reproductively active during all three capture sessions (August, December, and April), and non-volant (not capable of flying) pups were found in roosts from May through December (Ober *et al.* 2016, pp. 6, 8–9; Gore, pers. comm. 2017; Scofield, pers. comm. 2014b; Angell and Thompson 2015, p. 186; Myers, pers. comm. 2018a; Ridgley, pers. comm. 2015). In the first work on providing demographic estimates for the Florida bonneted bat, Bailey *et al.* (2017b, entire) suggested that recruitment is occurring year-round.

This species' long reproductive season makes non-volant bonneted bats more vulnerable to disturbance for a greater portion of each year, compared to other bat species (Ober *et al.* 2016, p. 8). For example, Florida bonneted bat pups were considered to be very likely present in bat houses during April 16–August 15, and quite possibly present from August 15 through December 31 in bat houses at Babcock-Webb WMA (Gore, pers. comm. 2017). Pups were not likely to be present from January 1 through April 15 (Gore, pers. comm. 2017). Based upon these data, flightless young bonneted bats are vulnerable to disturbance for nearly 9 months of the year in the Charlotte County area. This duration may be further extended in southern portions of the range or curtailed in northern portions of the range.

Most roosting bats are sensitive to human disturbance (Kunz 1982, p. 32), and maternity colonies may be especially intolerant of disturbance (Harvey *et al.* 1999, p. 13; see *Factor E*,

Inadvertent and Purposeful Impacts from Humans, final listing rule (78 FR 61004, October 2, 2013)). For many species, maternity roosts are commonly used as night roosts by lactating females and newly volant (capable of flying) young (see details in Kunz 1982, p. 39). Due to the apparent limitations in flight for pregnant and lactating females and newly volant young, retaining suitable night roosts and maternity roosts is especially important.

In addition, in a new study examining social organization at bat houses at Babcock-Webb WMA, researchers found the species roosted in relatively small groups, with an average size of 10 individuals, in a harem structure (Ober *et al.* 2016, p. 7). The finding of a harem structure is particularly relevant from a conservation standpoint for several reasons, as it suggests: (1) the importance of males and maintenance of social groups; (2) that disturbance of the roost at any time can alter social dynamics and impact reproductive success; (3) that augmenting the number of available small roost sites may be necessary to bolster populations (since harem structure may mean small colony sizes, defensible by a dominant male); and (4) additional roost structures may be necessary for dispersing sub-adult males attempting to establish new harems (Ober *et al.* 2016, p. 7). Based on the information outlined above, we find that suitable roosting habitat is a year-round necessity for the breeding and rearing of offspring and required for the conservation of this species.

Habitats Protected from Disturbance or Otherwise Representative of the Historical Geographical and Ecological Distributions of the Species

The Florida bonneted bat occurs in habitats that are protected from human-generated disturbances. These include Federal, State, local, and private conservation lands and other private (non-conservation) lands that retain natural areas and implement conservation measures

benefitting the species. Babcock-Webb WMA and APAFR are two examples of such areas, both supporting populations with known roosting and reproduction. These properties, each approximately 40,470 ha (100,000 ac), represent relatively functional ecosystems, and buffer wildlife from human-related threats and threatening processes. The species does appear somewhat tolerant of some level of human disturbances, the extent to which is unknown. For example, APAFR is an active military base, where bonneted bats are exposed to disturbances such as periodic missions and training exercises, some within a mile of roosts (Aldredge, pers. comm. 2019b). Similarly, individuals occupying bat houses at Babcock-Webb WMA are exposed to, and apparently tolerant of, active land management and recreational activities (e.g., prescribed fire, hunting). The species also occurs in agricultural areas and in urban, suburban, and residential areas (see *Use of Parks, Residential Areas, and Other Urban Areas*, final listing rule (78 FR 61004, October 2, 2013)). We conclude, however, that large patches of habitat, which are relatively free of human disturbances, are necessary for the stability of core populations, and therefore essential to the conservation of this species. Specifically, based on Florida bonneted bats' heavy use of Babcock-Webb WMA and APAFR, we consider areas of habitat 40,470 ha (100,000 ac) or greater as essential to the conservation of this species.

More specifically, the Florida bonneted bat is dependent upon tall, mature trees and dynamic forest processes (e.g., growth, decay, regeneration, openings in the canopy, natural fire regimes, and other disturbances such as storms that contribute to roosting structures or make habitat accessible). Healthy forested areas with trees of various age classes and natural processes (i.e., allowing for trees to grow, mature, decay, and regenerate) help provide the necessary continual supply of potential roosting structure (e.g., day roosts, night roosts, maternity sites). Other natural habitats with open or semi-open canopy, canopy gaps, and edges help provide open

space and relatively uncluttered conditions conducive to foraging, commuting, and general flight. Natural habitat types with diverse plant communities help provide a sufficient prey base and conditions for foraging, dispersal, and other life-history functions. Both natural disturbances (e.g., fire and storms) and land management actions (e.g., prescribed fire) help maintain overall habitat suitability and suitable conditions (e.g., structure). Braun de Torrez *et al.* (2018, entire) suggest that bats are attracted to increased availability of insect prey immediately following burns. Based upon their research, they suggest that prescribed fire can have short-term positive effects on bonneted bats and that restoring fire to fire-dependent forests may improve foraging habitat for the species (Braun de Torrez *et al.* 2018, entire). Therefore, we find that fire and other natural disturbance regimes maintain suitable habitat conditions and are essential to the conservation of this species.

Retaining natural habitats will become more important in the future with the anticipated habitat losses from development, climate change, and coastal squeeze, which occurs when habitat is pressed between rising sea levels and coastal development that prevents landward movement (see *Factor A, Land Use Changes and Human Population Growth, Climate Change and Sea Level Rise, Alternative Future Landscape Models and Coastal Squeeze*, final listing rule (78 FR 61004, October 2, 2013)). The conditions of forests, wetlands, and other land covers are likely to be under increased development pressures and be affected by large-scale changes in climate in the future. Changing habitat conditions due to changes in climate and responses by humans may make the bonneted bat shift from its current range, possibly moving inland or north (Rebelo *et al.* 2010, entire; Sherwin *et al.* 2012, entire; S. Wolf and J. Lopez, *in litt.* 2012). One model projects that the bonneted bat is likely to experience major range contraction both within Everglades National Park (ENP) and regionally by 2060 (Watling *et al.* 2014, p. 28). Similarly,

work by Bailey *et al.* (2017a, entire) also suggests that predicted changes in land cover (i.e., urbanization of the majority of natural and agricultural lands in south, south-central, and southwest Florida) and climate will be threats to the species. We have attempted to account for these influences in our proposed designation of critical habitat by recognizing that habitat composition may change beyond the range of historical variation, and that climate changes may have unpredictable consequences for both peninsular Florida and bonneted bats. This proposed critical habitat designation recognizes that forest management and general land management practices that promote ecosystem health under changing climate conditions will be important for bonneted bat conservation.

Summary of Essential Physical or Biological Features

We derived the specific PBFs essential for the Florida bonneted bat from observations and available studies of this species' habitat, ecology, and life history as described above (see also *Life History* and *Habitat*, final listing rule (78 FR 61004, October 2, 2013)). Where specific information was lacking or deficient, we relied on expert opinion and inferences based upon information from other *Eumops*, other molossids, or other comparable species (e.g., other fast-hawking insectivorous bats) as described above. Additional information can be found in the proposed and final listing rules (77 FR 60750, October 4, 2012; 78 FR 61004, October 2, 2013). We have determined that the following physical or biological features are essential to the conservation of the Florida bonneted bat:

(1) Representative forest types (all age classes) that support the Florida bonneted bat by providing roosting and foraging habitat within its core areas (i.e., Polk, Charlotte, Lee, Collier, Monroe, and Miami-Dade Counties), including:

- (a) Pine flatwoods;
- (b) Scrubby pine flatwoods;
- (c) Pine rocklands;
- (d) Royal palm hammocks;
- (e) Mixed or hardwood hammocks;
- (f) Cypress;
- (g) Mixed or hardwood wetlands;
- (h) Mangroves (mature and pristine);
- (i) Cabbage palms; and
- (j) Sand pine scrub.

(2) Habitat that provides for roosting and rearing of offspring; such habitat provides structural features for rest, digestion of food, social interaction, mating, rearing of young, protection from sunlight and adverse weather conditions, and cover to reduce predation risks for adults and young, and includes forest and other areas with tall or mature trees and other natural areas with suitable structures, which are generally characterized by:

- (a) Tall or mature live or dead trees, tree snags, and trees with cavities, hollows, crevices, or loose bark, including, but not limited to, trees greater than 10 m (33 ft) in height, greater than 20 cm (8 in) diameter at breast height, with cavities greater than 5 m (16 ft) high off the ground;
- (b) High incidence of tall or mature live trees with various deformities (e.g., large cavities, hollows, broken tops, loose bark, and other evidence of decay);
- (c) Sufficient open space for Florida bonneted bats to fly; areas may include open or semi-open canopy, canopy gaps and edges, or above the canopy, which provide relatively

uncluttered conditions; and/or

(d) Rock crevices.

(3) Habitat that provides for foraging, which may vary widely across the Florida bonneted bat's range, in accordance with ecological conditions, seasons, and disturbance regimes that influence vegetation structure and prey species distributions. Foraging habitat may be separate and relatively far distances from roosting habitat. Foraging habitat consists of:

(a) Sources for drinking water and prey, including open fresh water and permanent or seasonal freshwater wetlands, in natural or rural areas (non-urban areas);

(b) Wetland and upland forests, open freshwater wetlands, and wetland and upland shrub (which provide a prey base and suitable foraging conditions (i.e., open habitat structure));

(c) Natural or semi-natural habitat patches in urban or residential areas that contribute to prey base and provide suitable foraging conditions (i.e., open habitat structure); and/or

(d) The presence and abundance of the bat's prey (i.e., large, flying insects), in sufficient quantity, availability, and diversity necessary for reproduction, development, growth, and survival.

(4) A dynamic disturbance regime (natural or artificial) (e.g., fire, hurricanes) that maintains and regenerates forested habitat, including plant communities, open habitat structure, and temporary gaps, which is conducive to promoting a continual supply of roosting sites, prey items, and suitable foraging conditions.

(5) Large patches (more than 40,470 ha (100,000 ac)) of forest and associated natural or semi-natural habitat types that represent functional ecosystems with a reduced influence from humans (i.e., areas that shield the bat from human disturbance, artificial lighting, habitat loss and degradation).

(6) Corridors, consisting of roosting and foraging habitat, that allow for population maintenance and expansion, dispersal, and connectivity among and between geographic areas for natural and adaptive movements, including those necessitated by climate change.

(7) A subtropical climate that provides tolerable conditions for the species, such that normal behavior, successful reproduction, and rearing of offspring are possible.

Special Management Considerations or Protection

When designating critical habitat, we assess whether the specific areas within the geographical area occupied by the species at the time of listing contain features which are essential to the conservation of the species and which may require special management considerations or protection. The recovery of the Florida bonneted bat requires both habitat protection and management, where necessary, to provide sufficient high-quality habitat to allow for population growth and to provide a buffer against threats such as habitat loss, climate change, coastal squeeze, and other threats (see especially *Factor A* and *Factor E*, final listing rule (78 FR 61004, October 2, 2013)). The Service has not drafted a recovery plan for the Florida bonneted bat, but any such plan will likely focus on maintaining and expanding suitable roosting, foraging, and dispersal habitat throughout the species' range and reducing threats. Meeting this goal will require special management considerations or protection of the PBFs including passive (e.g., allowing natural processes to occur without intervention) and active (e.g., taking actions to restore habitat conditions or address threats) management.

The types of management or protections that may be required to achieve these goals and maintain the PBFs essential to the conservation of the Florida bonneted bat in occupied areas vary across the range of the species. In some areas of bat habitat, particularly in wetland forests,

open freshwater wetlands, and areas of open water, efforts may need to focus primarily on protection of the essential features (e.g., habitat conservation, conserving trees and snags, allowing natural processes to occur without intervention). However, other areas such as upland forests and degraded natural areas may need both protection and more proactive land management. For example, in coastal and fire-dependent regions of the species' range, habitat conditions may be more dynamic, and more active management may be required to reduce risks to the essential PBFs from wildfire, inadequate fire regimes, nonnative invasive plants, competition for tree cavities, pesticides, artificial lighting, inadvertent impacts from humans, hurricanes and storm surges, and sea-level rise.

The PBFs essential to the conservation of this species may require special management considerations or protection to reduce the following threats:

Habitat Loss

Habitat loss, degradation, and modification from human population growth and associated development (including infrastructure and energy development) and agriculture have impacted the Florida bonneted bat and are expected to further curtail its limited range (see *Factor A*, final listing rule (78 FR 61004, October 2, 2013); Bailey *et al.* 2017a, entire). Based on the expected rates of human population growth and urbanization in southern Florida, nearly all agricultural and private natural lands are predicted to be converted to developed land by 2060 (Zwick and Carr 2006). Of this, approximately 7.5 percent of the area in our proposed units (over 44,718 ha (110,500 ac)) are predicted to be converted to developed land by 2070 (Carr and Zwick 2016, entire). The species occurs, in part, on publicly owned lands that are managed for conservation, ameliorating some of these threats (see *Document Availability*, Supporting

Documents, above). However, any unknown extant populations of the bat or suitable habitat on private lands or non-conservation public lands are vulnerable to habitat loss and fragmentation. Retaining a habitat network of large and diverse natural areas for conservation purposes in a spatial configuration throughout the Florida bonneted bat's range and actively managing those lands will likely be essential to conservation. In addition, conservation efforts on private lands can help reduce the threats of habitat loss, increasing the potential for long-term survival.

Natural roosting habitat appears to be limiting, and competition for tree cavities is high (see *Factor E, Competition for Tree Cavities*, final listing rule (78 FR 61004, October 2, 2013)). To help conserve the Florida bonneted bat, efforts should be made to retain tall trees, cavity trees, trees with hollows or other decay, and snags wherever possible to protect habitat, reduce competition for suitable roosts, and bolster or expand populations within the species' known range (Angell and Thompson 2015, p. 187; Braun de Torrez *et al.* 2016, pp. 235, 240; Ober *et al.* 2016, p. 7). The use of artificial structures for the Florida bonneted bat may also be beneficial in some locations, especially where roosting structures are lacking or deficient (see *Use of Artificial Structures (Bat Houses)*, final listing rule (78 FR 61004, October 2, 2013)).

Substantial losses in suitable foraging habitats are expected to occur in the coming decades as natural and agricultural areas are converted to other uses and as areas become urbanized (Carr and Zwick 2016, entire; Bailey *et al.* 2017a, p. 1591). Conservation of natural and semi-natural habitats and restoration with native plants is imperative to help maintain sufficient prey base. Natural habitats conducive to insect diversity should be protected and any pesticides should be used with caution (see *Life History*, and *Factor E, Pesticides and Contaminants*, final listing rule (78 FR 61004, October 2, 2013)).

Climate Change and Sea-level Rise

The effects resulting from climate change, including sea-level rise, saltwater intrusion, and coastal squeeze, are expected to become severe in the future and result in additional habitat losses, including the loss of roost sites and foraging habitat (see *Factor A*, final listing rule (78 FR 61004, October 2, 2013)). Within the species' range, low-lying areas along the coast are most vulnerable to inundation, and additional areas are likely to experience changes in plant species composition (decline in forested habitat such as cabbage palm forests, pine rockland, and coastal hardwood hammocks). Occupied Florida bonneted bat habitat located near the coast in south Florida (e.g., Collier, Lee, Miami-Dade, Monroe, Charlotte, Desoto, and Sarasota Counties) will be vulnerable to inundation and/or saltwater intrusion as sea levels rise. An estimated 16.4 percent (97,832 ha (241,748 ac)) of the occupied habitat area we propose for designation is projected to be inundated by 6 feet of salt water around 2070 (sea level rise plus tidal flooding; Sweet *et al.* 2017, entire; Sweet *et al.* 2018, entire; Sweet *et al.* 2019, entire). Although we are unable to accurately estimate the extent of other climate change-related effects, we expect additional occupied habitat will be impacted by saltwater intrusion, drier conditions, and increased variability in precipitation, likely resulting in changes to vegetation composition and prey availability, decreased forest regeneration, and potential increases in wildfire frequency, severity, and scale (see *Factor A, Land Use Changes and Human Population Growth, Climate Change and Sea Level Rise*, final listing rule (78 FR 61004, October 2, 2013)). The trend toward higher temperatures and lower rainfall (or shifts in rainfall patterns) could result in the degradation of wetlands and other important open-water habitats, or complete loss of affected foraging areas if drought-like conditions persist. Actual impacts may be greater or less than

anticipated based upon high variability of factors involved (e.g., sea-level rise, human population growth) and assumptions made.

As a result of these impacts and other causes of habitat loss and degradation, PBFs may no longer be available in some areas, and the amount of suitable occupied Florida bonneted bat habitat is likely to shrink dramatically in the future. Habitat loss from sea-level rise and saltwater intrusion will be greatest in areas closer to the coast and is likely to result in the loss of some bonneted bat populations, such as those in eastern Miami-Dade County, reducing the species' ability to withstand catastrophic events (i.e., redundancy). We anticipate additional populations near the coast will be reduced in size, such as those in Charlotte, Lee, Collier, Monroe, and remaining areas in Miami-Dade Counties, resulting in decreased overall health and fitness (i.e., resiliency) of those populations. Further, most of the remaining bat populations face similar threats and pressures (e.g., development pressure, effects of climate change, coastal squeeze, droughts, hurricanes) that are expected to reduce their resiliency. This limits the species' ability to recover from population declines, when many populations are similarly affected. However, we lack certainty as to the severity of impacts the effects of sea level rise may have on the bat's critical habitat.

Directly addressing sea-level rise is beyond the control of landowners or managers. However, while landowners or land managers may not be able prevent these events, they may be able to respond with management or protection. Management actions or activities that could ameliorate the effects of sea-level rise on the Florida bonneted bat include providing protection of inland or higher elevation suitable habitats that are predicted to be unaffected or less affected by sea-level rise, or habitat restoration or enhancement of these areas. Conserving areas in the northern portion of the range may be particularly important, as bats may respond to increases in

temperatures and other changes in the environment, possibly becoming more heavily dependent upon these areas in the future.

Land Management Practices

While land management practices are intended to mimic natural processes and benefit native species like the Florida bonneted bat by maintaining habitat quality, these activities can result in inadvertent negative impacts. For example, removal of old or live trees with cavities or hollows during activities associated with forest management (e.g., timber management including tree removal/thinning/pruning), fuel reduction, prescribed fire, non-native or invasive species treatment, habitat restoration, or trail maintenance may inadvertently remove roost sites, if such sites are not known (see *Factor A, Land Management Practices*, final listing rule (78 FR 61004, October 2, 2013)). Also, while fire is a vital component in maintaining suitable habitat (Braun de Torrez *et al.* 2018, entire), cavity-roosting bats are generally susceptible to fire effects, and even a single, localized fire event could potentially impact individuals (Carter *et al.* 2000, p. 140). Loss of an active roost or removal during critical life-history stages (e.g., when females are pregnant or rearing young) can have severe ramifications, considering the species' apparent small population size and low fecundity (see *Factor E, Effects of Small Population Size, Isolation, and Other Factors*, final listing rule (78 FR 61004, October 2, 2013)). Risk from fire or other forest management practices may be minimized by conducting activities outside the bat's breeding season, though disturbance to roost sites at any time of the year may alter social dynamics and reproductive success (Blumstein 2010, pp. 665–666; Ober *et al.* 2016, p. 7).

Conversely, forest management can help maintain important roosting and foraging habitat (see *Use of Forests and Other Natural Areas*, final listing rule (78 FR 61004, October 2,

2013)), and, in fact, a lack of forest management, including a lack of prescribed fire, can be detrimental to the species. Management practices that include retaining large-cavity trees and snags, wherever possible, may help reduce competition for tree cavities (see *Factor E, Competition for Tree Cavities*, final listing rule (78 FR 61004, October 2, 2013)), enhance roosting opportunities, and help promote survival and the potential for population expansion over the long term. Prescribed fire has been found to have short-term positive effects on Florida bonneted bats, and restoring fire to fire-dependent forests may improve foraging habitat for this species (e.g., alter vegetation and prey base; create openings and alter structure) or create snags (Carter *et al.* 2000, p. 139; Boyles and Aubrey 2006, entire; Lacki *et al.* 2009, entire; Armitage and Ober 2012, entire; FWC 2013, pp. 9–11; Ober and McCleery 2014, pp. 1–3; Braun de Torrez *et al.* 2018, entire).

Wind Energy

Wind power is one of the fastest growing sectors of the energy industry (Horn *et al.* 2008, p. 123; Cryan and Barclay 2009, p. 1330), and the development of wind energy facilities in Florida may be of particular concern for the Florida bonneted bat as demand increases (see *Proposed Wind Energy Facilities*, final listing rule (78 FR 61004, October 2, 2013)). Wind turbines kill large number of bats across North America, through direct contact with blades or towers as well as due to barotrauma (which involves tissue damage to air-containing structures such as lungs, caused by rapid or excessive pressure changes that can result when wind turbine blades create zones of low pressure as air flows over them). Wind turbine facilities are being planned for sites east and west of Lake Okeechobee, and wind energy development companies have indicated that areas around Lake Okeechobee are the most suitable sites in Florida for wind

development (Tucker, *in litt.* 2012). If successfully developed, additional sites could be proposed, increasing the risk of impacts from wind energy to the Florida bonneted bat (Tucker, *in litt.* 2012).

While bat fatalities from wind energy facilities are well documented, potential impacts to the Florida bonneted bat are difficult to evaluate at this time, partly due to the uncertainty involving many factors (e.g., location of facilities, operations). Certain aspects of the species' status and life history may increase vulnerability to impacts from wind energy facilities. The species' small population and low fecundity make any additional potential sources of mortality cause for concern. The species' high and strong flight capabilities and fast-hawking foraging behavior may increase risk. Conversely, as the species is non-migratory, potential impacts from wind energy facilities may not be as great in magnitude as perhaps other bat species that are migratory. Implementation of the Service's land-based wind energy guidelines may also help to avoid and minimize some impacts (Service 2012, pp. 1–71).

Environmental Stochasticity

Hurricanes, storm surges, and other catastrophic and stochastic events are of significant concern (see *Factor E, Environmental Stochasticity and Aspects of the Species' Life History and Climate Change Implications*, final listing rule (78 FR 61004, October 2, 2013)). In 2017 alone, at least four known roost trees were impacted by Hurricane Irma. While landowners or land managers cannot prevent these events, they may be able to respond with protection or management that can help reduce some effects or facilitate recovery from these events. Retention of large trees and snags wherever possible in multiple locations can help provide valuable roosting habitat throughout the species' range (Braun de Torrez *et al.* 2016, pp. 235,

240; Ober *et al.* 2016, p. 7). Management actions or activities that could enhance forest recovery following storms may include hand or mechanical removal of damaged vegetation or prescribed fire, if or when conditions are suitable. If large trees, cavity trees, trees with hollows or other decay, or snags need to be removed due to safety issues, visual or other inspection should occur to ensure that active roosts are not removed in this process.

Artificial structures could potentially help provide roosting opportunities in areas impacted by stochastic events or where suitable natural roosts are lacking or deficient. More research on the role of bat houses in bonneted bat conservation is needed, especially given the bat's social structure (FWC 2013, pp. 11–12; Ober *et al.* 2016, p. 7). If used, bat houses should be appropriately designed, placed, maintained, and monitored; such structures may also need to be reinforced and duplicated to prevent loss. If an occupied area is severely impacted, causing major losses of suitable natural roosts, the use of artificial structures could be explored as one possible option to help regain lost roosting capacity.

Pesticides and Contaminants

More study is needed to fully assess the risk that pesticides and contaminants pose to the Florida bonneted bat (see *Factor E, Pesticides and Contaminants*, final listing rule (78 FR 61004, October 2, 2013)). Although data are lacking, the species may be exposed to a variety of compounds through multiple routes of exposure. Areas with intensive pesticide activity may not support an adequate food base. Foraging habitat can be enhanced, in part, by limiting the use of pesticides, including agrochemicals (chemicals used in agriculture) (Russo and Jones 2003, pp. 206–207; Wickramasinghe *et al.* 2003, pp. 991–992; Wickramasinghe *et al.* 2004, entire). While exposure to some contaminants (e.g., mercury) may be beyond the realm of what individuals or

agencies can rectify, risks from pesticides can be partially reduced at the local level. For example, landowners and land managers can help reduce some risks of exposure and improve foraging conditions for the Florida bonneted bat by avoiding or limiting use of insecticides (e.g., mosquito control, agricultural), wherever possible, and especially in areas known to be occupied by the Florida bonneted bat. An increased occurrence of bonneted bats was found in agricultural areas and was attributed to a combination of insect abundance in these areas and the species' ability to forage in open spaces (Bailey *et al.* 2017a, pp. 1589, 1591). It is reasonable to assume that prey base (i.e., availability, abundance, and diversity of insects) would be more plentiful with reduction of insecticides, where possible. If pesticides cannot be avoided, ways to reduce impacts should be explored. Protecting natural and semi-natural habitats that support insect diversity can also improve foraging conditions and contribute to conservation.

Ecological Light Pollution

The Florida bonneted bat's behavioral response to ecological light pollution has not been examined; thus, the effects are not known (see *Factor E, Ecological Light Pollution*, final listing rule (78 FR 61004, October 2, 2013)). The effects of artificial lighting on other bats and their prey have been partially studied. Artificial lighting may affect insect abundance or availability and prey base, thereby altering foraging conditions and community structure. Artificial lighting can also alter the normal movements and behaviors of bat species, negatively affecting the energy reserves of individuals (Longcore and Rich 2004, pp. 193–195). Thus, at this time, we consider ecological light pollution a potential threat to the Florida bonneted bat and its habitat. Management actions or activities that could ameliorate ecological light pollution include:

avoiding and minimizing the use of artificial lighting, retaining natural light conditions, and promoting the use of environmentally friendly lighting practices to minimize impacts to wildlife.

Inadvertent and Purposeful Impacts from Humans

Inadvertent or purposeful impacts by humans caused by intolerance or lack of awareness (e.g., removal of bats, landscaping activities, and bridge or infrastructure maintenance) can lead to mortality or destruction and disturbances to roosts during sensitive times (maternity season) (see *Factor E, Inadvertent and Purposeful Impacts From Humans*, final listing rule (78 FR 61004, October 2, 2013)). Single or repeated disturbances to roosts or disturbances at sensitive times may cause abandonment or other negative impacts. The Florida bonneted bat may be somewhat tolerant of human disturbances, in some environments, but the extent of that tolerance is unknown. Agencies, land managers, and landowners can help avoid impacts to roosting habitat by implementing some of the following proactive or mitigative measures: raising awareness of the species' abilities to use artificial structures as roosts; conserving natural roosting sites, including forested habitat and areas with mature trees; minimizing disturbance of roosting sites during sensitive times of the year; using care during landscaping if vegetation provides suitable or potential roosts; implementing protective measures when conducting bridge maintenance and repair; using care when replacing or repairing utility poles; and employing other best management practices, whenever possible.

Many species of bats use highway structures either as day or night roosts (Keeley and Tuttle 1999, p. 9). Although *Eumops* has not been documented to use bridges or culverts, the genus can potentially use such structures (Keeley and Tuttle 1999, p. 28; Marks and Marks, pers. comm. 2008). If the Florida bonneted bat is found to use these structures, agencies could explore

opportunities for creating roosting habitat in new or existing highway structures, when projects are planned and as repairs on infrastructure are needed (Keeley and Tuttle 1999, pp. 18–20). Roadways with structures passing through public conservation lands may be especially suitable for such habitat enhancement projects (Keeley and Tuttle 1999, p. 18). Retrofitting projects can help enhance habitat for bats, can be inexpensive, and can also benefit agriculture, as bats play important roles in arthropod suppression, helping to naturally control agricultural pests and reduce the need for pesticide use (Keeley and Tuttle 1999, pp. 18–20; Jones *et al.* 2009, pp. 97–98; Kunz *et al.* 2011, entire). In addition to minimizing environmental damage from infrastructure projects, other mitigation may include providing alternative roosts on-site or artificial structures off-site (Keeley and Tuttle 1999, p. 21).

Occupancy at the Time of Listing

The geographical area occupied by the species at the time of listing is defined at 50 CFR 424.02 as an area that may generally be delineated around species' occurrences, as determined by the Secretary (i.e., range). Such areas may include those areas used throughout all or part of the species' life cycle, even if not used on a regular basis (e.g., migratory corridors, seasonal habitats, and habitats used periodically, but not solely by vagrant individuals). To make reasonable determinations about occupancy, we used all data and information available on the Florida bonneted bat (see also *Space for Individual and Population Growth and for Normal Behavior*, above). The best available scientific data for Florida bonneted bat occurrences date from 2003, reflecting the beginning of recent survey efforts. The Florida bonneted bat appears to have a relatively long lifespan, assuming a lifespan of 10 to 20 years for bats of this size (Wilkinson and South 2002, entire). Thus, bats documented between 2003 and 2013 may still be

alive and using the general locations where originally located. Adult Florida bonneted bats appear to also have high site fidelity (Ober *et al.* 2016, pp. 4–7), and more recent data are consistent with those from previously surveyed areas. Accordingly, it is reasonable to conclude these areas were still inhabited by bonneted bats when the species was listed in 2013 (see also *Occupied and Potential Occupied Areas*, final listing rule (78 FR 61004, October 2, 2013)). Therefore, we considered areas with documented presence of bonneted bats since 2003 (11 years prior to its listing) as occupied at the time of listing.

For this same reason, we considered areas with documented presence of bonneted bats from October 2013 through 2019 as occupied at the time of listing. Again, due to the species' life span and high site fidelity, it is reasonable to conclude that these areas found to be occupied in 2013 to 2019 would have been inhabited by bonneted bats when the species was listed in 2013. The confirmed presence data received after listing (through 2019) corresponded well with previous data and generally reinforced our understanding of occupied areas.

We also conclude that areas surrounding point locations of confirmed presences at time of listing were occupied by bonneted bats at that time (see also detailed discussion in *Space for Individual and Population Growth and for Normal Behavior*, above). Due to the species' morphological characteristics and flight capabilities, bonneted bats use areas within reasonable flight distances from the locations where they were recorded or otherwise documented. Data from satellite-tagged Florida bonneted bats (few bats inhabiting one site) indicated that individuals foraged as far as 39 kilometers (km) (24 miles (mi)) from their capture sites (Ober 2016, p. 3; Webb, pers. comm. 2018a–b). However, roost locations (the center point of bat activities) related to these data were unknown. Therefore, as a conservative estimate of foraging distance, we used a 19-km (12-mi) radius from documented presences (i.e., assuming a normal

distribution of activity 0 to 24 miles from the center point). Although flight distances appear to differ based upon sex and season (Webb, pers. comm. 2018b), and may vary based on habitat quality and available food resources, for the purposes of this effort, based on the best available science and to conservatively target areas most essential to the species' recovery, we considered areas within a 19-km (12-mi) distance or radius from confirmed presences to be occupied at the time of listing.

We further acknowledge that areas for which we lack data may also have been occupied at the time of listing. Limited confirmed presence data (see proposed and final listing rules (77 FR 60750, October 4, 2012; 78 FR 61004, October 2, 2013) are confounded by the difficulties in detection, due in part to the following factors: the species' general rarity; aspects of the species' ecology (e.g., flies high, travels long distances, is nocturnal); limitations in survey equipment (e.g., recording distance of acoustic devices), design (e.g., lack of randomization (selection of a random sample)), or effort (e.g., insufficient listening periods, recordings not taken from sunset to sunrise); and other limitations (e.g., large areas not surveyed due to lack of resources or access, surveys primarily conducted on public lands) (see also *Acoustical Survey Efforts as Indicators of Rarity*, proposed and final listing rules; **Summary of Comments and Recommendations**, final listing rule (78 FR 61004, October 2, 2013)).

Overall, (1) bonneted bats are rare on the landscape, meaning they are difficult to detect; (2) bonneted bats are elusive (e.g., they fly high and fast over large distances) and nocturnal by nature, again making them difficult to detect; and (3) repeated, intensive, and systematic surveys on lands within the species' range are generally lacking, meaning that a lack of detection does not necessarily indicate the species' absence (given the data available). Therefore, there is uncertainty as to whether or not other areas (i.e., those areas not surveyed and those areas that

have been surveyed but lack confirmed presence data) were also occupied at the time the bonneted bat was listed. Large expanses of the bonneted bat's range have not been systematically surveyed or, if surveyed, they have not been surveyed rigorously enough to confirm absence (e.g., surveyed on a single or partial night, insufficient number of acoustic devices used, survey not repeated). We recognize that the available occurrence data, largely obtained through acoustical surveys, are limited in several regards (e.g., not randomized, conducted largely on public lands, employed insufficient listening periods, had different detection rates, used different devices and methods, large areas not surveyed). Due to the survey limitations and constraints, it should be noted that confirmed presences were more likely to be detected in preferred habitats, on public lands, and in accessible areas. Due to both the limited number of surveys undertaken and the overall lack of rigor (e.g., effort insufficient to fully document presence or suggest absence), it is reasonable to assume that other areas where suitable habitat exists within the geographic range may also have been occupied at the time of listing. However, for the purposes of this proposed designation, we relied on confirmed presence data including a radius of areas the bat uses around those points.

Criteria Used to Identify Critical Habitat

As required by section 4(b)(2) of the Act, we use the best scientific data available to designate critical habitat. In accordance with the Act and our implementing regulations at 50 CFR 424.12(b), we review available information pertaining to the habitat requirements of the species and identify specific areas within the geographical area occupied by the species at the time of listing and any specific areas outside the geographical area occupied by the species that could be considered for designation as critical habitat.

We are proposing to designate critical habitat units that we have determined, based on the best available scientific and commercial information, to be occupied at the time of listing (see **Occupancy at the Time of Listing**, above). Thus, the areas being proposed for designation contain one or more of the PBFs that are essential to support life-history processes of the species and which may require special management considerations or protection pursuant to section 3(5)(A)(i) of the Act. As a highly social species, the Florida bonneted bat likely exhibits a metapopulation life-history model (a group of spatially separated populations that interact at some level), and although the species appears to exhibit strong roost site-fidelity, individuals within populations can and do move through suitable habitat to take advantage of changing conditions (e.g., availability of prey, roost sites) in a dynamic fashion through space and time (Ober *et al.* 2016, entire). We included areas that are expected to help maintain suitable roosting habitat and that include certain forested features we believe provide for connectivity and dispersal between geographic areas and/or subpopulations (see *Population Estimates and Status* and *Factor E, Effects of Small Population Size, Isolation, and Other Factors*, final listing rule (78 FR 61004, October 2, 2013)). However, at any given moment, not all areas within each unit are being used by the species because, by definition, individuals within metapopulations move in space and time. Therefore, within the current range of the species, to the best of our knowledge, some portions of these units may or may not be actively used by individuals, colonies, or extant bat subpopulations or populations, but we consider these areas to be occupied at the scale of the geographic range of the species.

For this proposed rule, we employed the following basic steps to delineate potential critical habitat (detailed methods follow below):

- (1) We compiled all available data from confirmed observations, acoustical recordings,

and other records of the Florida bonneted bat (see *Data Sources*, below).

(2) Using the best available science, including confirmed presence data from 2003 through 2014, and reasonable inferences regarding home range sizes and flight distances of other *Eumops* and other comparable species, we conducted habitat analyses to better understand Florida bonneted bat habitat use at multiple spatial scales (see *Habitat Analyses*, below).

(3) Based on the results of our habitat analyses and using the best available scientific information, including confirmed presence data from 2003 to 2019, and foraging distance data, we evaluated occupied areas for suitability, identified areas containing the PBFs that may require special management considerations or protection, and circumscribed boundaries of potential proposed occupied critical habitat units (see *Mapping Critical Habitat Units*, below).

Specific criteria and methodology used to determine proposed critical habitat unit boundaries are discussed below.

Data Sources

For our habitat analyses and unit delineations, we used confirmed presence data from 2003 through 2019 (see **Occupancy at the Time of Listing**, above). Only confirmed presences (i.e., not suspected bat calls) with specific location information were used. Only data for which we had a high degree of confidence and detailed location information were used. As such, we included data from the following sources:

(a) Range-wide surveys conducted in 2006–2007, to determine the status of the Florida bonneted bat following the 2004 hurricane season, and follow-up surveys in 2008 (Marks and Marks 2008a, pp. 1–16 and appendices; 2008b, pp. 1–6);

(b) Surveys conducted in 2008 along the Kissimmee River and Lake Wales Ridge, as part of bat conservation and land management efforts (Marks and Marks 2008c, pp. 1–28; 2008d, pp. 1–21; Morse 2008, p. 2);

(c) Surveys conducted within BCNP in 2003 and 2007 (Snow, pers. comm. 2012f), and surveys conducted in BCNP in 2012–2014 (Arwood, pers. comm. 2012a–b, 2013a–c; 2014a–d);

(d) Surveys conducted in 2011–2012 in ENP (Snow, pers. comm. 2012b–e; *in litt.* 2012);

(e) Surveys conducted in 2010–2012, to fill past gaps and better define the northern and southern extent of the species’ range (Marks and Marks 2012, entire);

(f) Surveys conducted at APAFR in 2013 (Scofield, pers. comm. 2013a–f);

(g) Surveys conducted at FPNWR in 2013 (Maehr 2013, entire; Maehr, pers. comm. 2013b);

(h) Surveys conducted at Zoo Miami, Larry and Penny Thompson Park, and Martinez Preserve in 2012 and 2013 (Ridgley, pers. comm. 2013a–d; 2014a–c); and

(i) Surveys conducted at PSSF, multiple years (Smith, pers. comm. 2013).

Additional details regarding the above surveys are described in the proposed and final listing rules (77 FR 60750; 78 FR 61004). All relevant new occurrence data received since the final rule was published (October 2, 2013) through May 2014 were also considered in the habitat analyses. The most significant of these was the discovery of an active natural roost site, within an enlarged cavity in a live longleaf pine at APAFR (Scofield, pers. comm. 2013g–i; 2014a–b; Angell and Thompson 2015, entire) (see specifics in *Cover or Shelter*, above).

More recent occurrence data (collected June 2014 through 2019) confirmed earlier data and further informed our understanding of how bats use their landscape. For the reasons stated above (see *Occupied at the Time of Listing*), we conclude it is reasonable to assume that bats

occupying specific areas in 2014 to 2019, occupied those areas at the time of listing in 2013. We incorporated these data into our determination of which areas may contain the PBFs. Together, this information guided our mapping of critical habitat units, and were used to verify areas of high-quality habitat we previously identified. These data included the following:

- (a) Range-wide surveys conducted in 2014 and 2015 to determine Florida bonneted bat distribution and habitat use (Bailey *et al.* 2017a, entire);
- (b) Ongoing telemetry studies to identify natural roost sites and foraging habits (Webb, pers. comm. 2017a-e; Braun de Torrez, pers. comm. 2019a-e);
- (c) Surveys conducted from 2014 to 2019 on private lands by private consultants (unpublished data, various sources); and
- (d) Surveys conducted from 2014 to 2019 within conservation and public lands (unpublished data, various sources; including, for example, APAFR, BCNP, FPNWR, FSPSP).

For our habitat analyses and subsequent unit delineations, we used a variety of data sources that provide information regarding land cover/habitat type and condition, as described below. We obtained vegetation cover types and land uses from the Florida Land Use and Cover Classification System (FLUCCS) GIS database (FWC and Florida Natural Areas Inventory (FNAI) 2015). FLUCCS categories were grouped to condense more than 100 different vegetation cover/land use classes into 10 major land cover categories. These included: wetland forest, wetland shrub, upland forest, upland shrub, open freshwater wetlands, saltwater wetlands, grasslands/open land, agricultural, urban, and water. We used 0.8-km (0.5-mi) grid cells to examine land cover types within south and central peninsular Florida, encompassing the entirety of the species' known historical, current, and suspected range. Percentages of each of the 10 major land cover categories in each 0.8-km (0.5-mi) grid cell were calculated using the area tool

in ArcGIS; these were then used for a series of habitat analyses.

We used available RCW data layers (mainly active and inactive cavity trees), based upon suggestions from FWC and evidence indicating that Florida bonneted bats use enlarged woodpecker cavities for roosting (Angell and Thompson 2015, entire) (see *Cover or Shelter*, above). Although Florida bonneted bats likely use various structures for roosting, active and inactive RCW cavity trees were selected as an appropriate indicator to evaluate potential roosting habitat (especially in areas where bat surveys were lacking). RCW cavity trees are also a good surrogate for roosting habitat because the RCW is tracked due to its State and Federal status (i.e., agencies have current and reliable data on RCWs, but not necessarily other non-listed cavity nesters). Data included locations of RCW cavity trees from various sources. Where in-house data were outdated, more recent information was obtained through the assistance of FWC and other agencies. This included information from the following locations and sources:

- Babcock-Webb WMA—locations where Florida bonneted bats were recorded near RCW clusters (J. Myers, pers. comm. 2013b);
- Corbett WMA—locations of active and inactive RCW trees (P. Miles, pers. comm. 2013);
- DuPuis Wildlife and Environmental Area—locations of active and inactive RCW trees (V. Sparling, pers. comm. 2014);
- Big Cypress WMA—locations of active and inactive RCW trees (R. Scott, pers. comm. 2014); and
- PSSF—locations of RCW cavity trees (e.g., active and inactive cavity trees, enlarged cavity entrance trees, dead standing cavity trees) (Sowell, pers. comm. 2013, 2014).

For areas within BCNP and ENP, we also used areas searched for the ivory-billed woodpecker

(*Campephilus principalis*) and other woodpeckers (i.e., areas that contained large-cavity trees) as part of Cornell University's study (Lammertink *et al.* 2010, entire).

We used ESRI ArcGIS online basemap aerial imagery (collected December, 2010) and Digital Orthophoto Quarter Quadrangles (1-m true color; collected 2004) of select areas to cross-check FLUCCS and ensure the presence of PBFs. We used the most recent county-supplied imagery datasets available at the time of the habitat analysis. To identify high-value areas (i.e., high-quality habitat expected to have conservation value now or in the future), we used the FNAI Florida Conservation Lands dataset. In Miami-Dade County, we also used the Institute for Regional Conservation's Natural Forest Community delineation, exclusive of ENP (IRC 2006). Lastly, we used the most recent available county parcels layers for regions intersecting critical habitat units to identify ownership.

Habitat Analyses

We conducted a series of GIS analyses to better understand habitat use along different spatial scales (i.e., across the landscape, by geographic region, and by specific locations (e.g., natural roost site). To best represent those habitat conditions which provide the PBFs for Florida bonneted bats, we first identified four geographic regions to focus on in our habitat analysis based on confirmed presence data: (1) west (Charlotte/Lee Counties), (2) southwest (Collier/Monroe/Lee/Hendry Counties), (3) southeast (Miami-Dade County), and (4) north-central (Polk/Okeechobee and adjacent counties). These geographic regions may represent subpopulations or multiple subpopulations within a metapopulation (see *Population Estimates and Status* and *Factor E, Effects of Small Population Size, Isolation, and Other Factors*, final listing rule (78 FR 61004, October 2, 2013)).

Based on limited tracking data (Braun de Torrez, pers. comm. 2015a; Ober 2015, p. 3) indicating that, in some situations, bonneted bats may spend more time within 1.6-km (1-mi) of their roosts, we applied this distance as a radius around confirmed presences to analyze habitat types. Habitat within these circular areas around Florida bonneted bat presence locations was analyzed based on FLUCCS land cover types, which we grouped and applied to 0.8-km (0.5-mi) grid cells (see *Data Sources*, above).

Using this approach, we identified the top five cover types in terms of area (i.e., highest percentage of total area) as being the most important cover types, based upon limited data and analyses. In natural landscapes, wetland forest, open freshwater wetland, wetland shrub, upland forest, and upland shrub comprised the top five land cover types when examining habitats within 1.6 km (1 mi) of confirmed presences. When analyzing habitat within the geographic regions, top habitat types were similar, although the most prevalent land cover type varied based on the geographic area. In the vicinity of the one active natural roost known at the time of our analysis, upland forest and upland shrub comprised approximately 90 percent of the surrounding habitat, while at another select location (Annette's Pond in BCNP), wetland forest represented over half of the habitat within 1.6 km (1 mi).

Mapping Critical Habitat Units

Using results from our habitat analyses, and available occurrence and movement data, we evaluated habitat suitability for the Florida bonneted bat. This species likely uses roosting sites that are located within reasonable distances from their confirmed presences (i.e., “central-place foraging”; Rainho and Palmeirim 2011). Similarly, given their social nature, bonneted bats are presumed to use habitats near where they have been detected to perform other activities; hence

these habitats are considered important to fulfill essential life functions. It should be recognized that actual habitat used by Florida bonneted bats may be removed in time and space from point locations identified during one-time surveys. The underlying uncertainty associated with point encounters means that it is difficult, and possibly inaccurate, to use bounded home ranges from empirical data when site-specific information regarding habitat use at surveyed areas is lacking. Foraging, roosting, breeding, dispersal, emigration, and recolonization require movements through habitats across generations, which may venture well beyond estimated single-night or single-season home ranges or movement distances. To account for this, we considered the distribution of suitable habitat features in relation to confirmed presence locations and the ability of bats to move along good habitat corridors. It is evident that other *Eumops* and other molossidids can, over the course of a night, move through several kilometers of habitat (if the intervening habitat or conditions are suitable) (Tibbitts *et al.* 2002, entire; Ober 2015, p. 3; Braun de Torrez, pers. comm. 2015a; Ober 2016, p. 3; Webb, pers. comm. 2018a-b). Habitat connectivity is particularly important for the Florida bonneted bat given its limited geographic range and need for dispersal and expansion as the species responds to numerous threats.

Therefore, given observed flight distances from data available on comparable species at the time of our habitat analyses, we first evaluated natural habitats within 12 km (7.5 mi) of confirmed detections from 2003 through May 2014 to guide our identification of important occupied areas. This radius was selected as a conservative distance representing the midpoint of 24 km (15 mi), which we determined to be a reasonable estimate of foraging distance based on one-way distance data for related and comparable species available at the time of our habitat analyses (Tibbitts *et al.* 2002, p. 11; Gore, pers. comm. 2013). While more recent data indicate bonneted bats can fly much farther than this (Ober 2016, p. 3; Webb, pers. comm. 2018a-b; see

also *Space for Individual and Population Growth and for Normal Behavior* and **Occupancy at the Time of Listing**, above), we chose to retain the 12-km (7.5-mi) radius as a more suitable analysis distance to focus conservation of high-quality foraging habitat nearer to roosts. Natural habitats within this radius of confirmed presences were evaluated unless some other habitat parameter (as outlined in the PBFs above) suggested low habitat utility or practical dispersal barriers (e.g., urban habitat, areas devoid of natural cover or insects). In some cases, high-quality habitats beyond the 12-km (7.5-mi) radius were included, if habitats were contiguous and adjoining (e.g., adjoining forest within BCNP) or a natural corridor.

To identify areas containing the PBFs for Florida bonneted bats that may require special management considerations or protection, we applied the findings of our habitat analyses to evaluate occupied habitat using both FLUCCS and images from aerial photography in GIS. We determined that grid cells (see *Data Sources*, above) with at least 80 percent of the top five cover types (see *Habitat Analyses*, above) qualified as suitable habitat for the Florida bonneted bat. This threshold was chosen after comparing with other values over 50 percent (i.e., values representing grid cells having a majority of habitat within the top five cover types). We found that despite a large amount of overlap between these values, using the relatively less inclusive 80-percent threshold resulted in the best balance of identifying high-quality habitat that have PBFs and excluding low-quality areas that do not, based on site-specific knowledge. Thus, concentrations of grid cells that contained at least 80 percent of the top five important cover types within each geographic region were generally retained as areas that may contain PBFs. We included areas of water within the 12-km (7.5-mi) radius as well as aggregations of adjacent forested areas that were contiguous yet beyond 12 km (7.5 mi), if these areas contained significant upland or wetland forest (i.e., met 80-percent threshold, using applied 0.8-km (0.5-

mi) grids). We also considered RCW data and conservation lands, where applicable (see *Data Sources*, above). Using this approach, we identified aggregations of important high-quality, mixed habitat types in geographic regions. We subsequently evaluated these areas of high-quality habitat using additional occurrence data (June 2014 through 2019) and found a high degree of overlap between these data and areas previously identified in our analyses. Most notably, all newly discovered natural roosts (i.e., those located in 2015 through 2019) were found in high-quality forested habitats within our identified areas.

Using the approaches described above, we delineated a total of five areas considered to be occupied at the time of listing (see **Occupancy at the Time of Listing**, above) as critical habitat for the Florida bonneted bat. One of these areas consists primarily of lands within APAFR, an area with well-documented occurrence and roosting, as well as areas surrounding the Kissimmee River, which are likely important for connectivity but lack general survey information. Due to the latter, we revised the boundaries of this area to conform to the boundaries of APAFR. APAFR is covered by an approved integrated natural resources management plan (INRMP) that provides benefits to the Florida bonneted bat and its habitat and thus will be exempted from the proposed designation under section 4(a)(3)(B)(i) of the Act (see **Exemptions**, below). The four remaining critical habitat units proposed for designation are described below (see **Proposed Critical Habitat Designation**, below).

We are not proposing to designate any areas outside the geographical area occupied by the species at the time of listing because we did not find any unoccupied areas to be essential for the conservation of the species. We determined that a critical habitat designation limited to geographical areas occupied by the species is adequate to ensure the conservation of the species. The occupied areas identified for designation provide for the conservation of the Florida

bonneted bat because they provide ecological diversity (i.e., representation), and duplication and distribution of populations across the range of the species (i.e., redundancy), allowing the species to withstand catastrophic events. Additionally, the areas are sufficiently large to allow for populations with adequate resiliency. All areas proposed as critical habitat are within the geographical area occupied by the bat at the time of listing and contain the PBFs essential to the conservation of the species.

When determining proposed critical habitat boundaries, we made every effort to avoid including large areas of agriculture or developed areas such as lands devoid of native vegetation or covered by buildings, pavement, and other structures due to the general lack of PBFs for the Florida bonneted bat. The scale of the maps we prepared under the parameters for publication within the Code of Federal Regulations may not reflect the exclusion of such developed lands. Any such developed lands inadvertently left inside critical habitat boundaries shown on the maps of this proposed rule have been excluded by text in the proposed rule and are not proposed for designation as critical habitat. Therefore, if the critical habitat is finalized as proposed, a Federal action involving these developed lands would not trigger section 7 consultation with respect to critical habitat and the requirement of no adverse modification unless the specific action would affect the PBFs in the adjacent critical habitat.

The proposed critical habitat designation is defined by the map or maps, as modified by any accompanying regulatory text, presented at the end of this document in the rule portion. We include more detailed information on the boundaries of the proposed critical habitat designation in the preamble of this document. We will make the coordinates or plot points or both on which each map is based available to the public on <http://www.regulations.gov> at Docket No. FWS–R4–ES–2019–0106, on our Internet sites <http://www.fws.gov/verobeach/>, and at the South

Florida Ecological Services Office (see **FOR FURTHER INFORMATION CONTACT**, above).

Proposed Critical Habitat Designation

We are proposing to designate four units of occupied habitat as critical habitat for the Florida bonneted bat. All four units are occupied (at the time of listing and currently, based on the most recent data available; see description of occupancy status, above). Portions of three of these units overlap with areas that have already been designated as critical habitat for six other federally listed species (table 1).

Table 1 lists the approximate area of each critical habitat unit, land ownership, and co-occurring listed species and critical habitat within each proposed critical habitat unit. Area values were computer-generated using GIS software, summed within each ownership category, and then rounded to the nearest whole number. Ownership was classified into one of six categories—Federal, Tribal (including lands held in trust by the Federal Government), State, county, local, or private/other (including nonprofit organizations)—by reviewing the most recent parcel ownership data provided by each county. Where ownership is classified as “Unidentified,” it means that ownership of that area could not be determined for one or more of the following reasons: (1) records within parcel data missing ownership data or marked as no data, abandoned, no value, or reference only (may include roads of unidentified ownership), and (2) areas missing from parcel data for which ownership could not be determined and accurately calculated (e.g., some roads, rights-of-way, and surface waters).

The four areas we propose as critical habitat are:

(1) Unit 1: Peace River and surrounding areas (Charlotte, DeSoto, Hardee, and Sarasota

Counties);

(2) Unit 2: Babcock-Webb WMA, Babcock Ranch, and surrounding areas (Charlotte, Lee, and Glades Counties);

(3) Unit 3: Big Cypress and surrounding areas (Collier, Monroe, and Hendry Counties);
and

(4) Unit 4: Miami-Dade natural areas (Miami-Dade County).

Table 1. Florida bonneted bat proposed critical habitat units, including hectares (ha) and acres (ac) by land ownership type, and co-occurring listed species and designated critical habitat found in each unit. Note: WMA = Wildlife Management Area.

Unit	Ownership	Area (ha (ac))	Co-occurring Listed Species or Existing Critical Habitat (ha (ac)) for Listed Species (E = endangered; T = Threatened)
Unit 1—Peace River and surrounding areas			Audubon's crested caracara (T); wood stork (T); Britton's beargrass (E); Lewton's polygala (E); pygmy fringe-tree (E); Florida panther (E); eastern indigo snake (T); West Indian manatee (T, CH = 507 ha [1,254 ac])
	State	4,537 (11,212)	
	County	119 (295)	
	Local	13 (32)	
	Private and Other	14,087 (34,810)	
	Unidentified	793 (1,960)	
	Total	19,550 (48,310)	
Unit 2—Babcock-Webb WMA, Babcock Ranch, and surrounding areas			Florida panther (E); Audubon's crested caracara (T); Florida scrub-jay (T); red-cockaded woodpecker (E); wood stork (T); beautiful pawpaw (E); eastern indigo snake (T); West Indian manatee (T)
	Federal	1 (3)	
	State	61,128 (151,050)	
	County	3,724 (9,203)	
	Local	8 (21)	
	Private and Other	32,001 (79,077)	
	Unidentified	642 (1,587)	
	Total	97,505 (240,941)	
Unit 3—Big Cypress and surrounding areas			Audubon's crested caracara (T); Cape Sable seaside sparrow (E); red-cockaded woodpecker (E); wood stork (T); Florida panther (E); eastern indigo snake (T); West Indian manatee (T, CH = 3,868 ha [9,557 ac])
	Federal	250,733 (619,573)	
	Tribal	10,527 (26,012)	
	State	61,869 (152,882)	
	County	3,384 (8,362)	
	Local	173 (427)	
	Private and Other	38,227 (94,460)	
	Unidentified	1,920 (4,745)	
	Total	366,833 (906,462)	
Unit 4—Miami-Dade natural areas			West Indian manatee (T); Florida panther (E); Cape Sable seaside sparrow (E, CH = 21,491 ha [53,104 ac]); Everglade snail kite (E, CH = 2,000 ha [4,941 ac]); wood stork (T); eastern indigo snake (T); Bartram's scrub- hairstreak (E, CH = 3,235 ha [7,994 ac]); Garber's spurge [T]; American crocodile (T, CH = 17,242 ha [42,606 ac]); Florida leafwing (E, CH = 3,235 ha [7,994 ac]); sand flax (E); Blodgett's silverbush (T); Miami tiger beetle (E); Florida bristle fern (E)
	Federal	71,385 (176,395)	
	Tribal	326 (805)	
	State	26,159 (64,639)	
	County	4,210 (10,404)	
	Local	114 (281)	
	Private and Other	11,496 (28,408)	
	Unidentified	683 (1,688)	
	Total	114,372 (282,620)	
TOTAL		598,261 (1,478,333)	

We present brief descriptions of all units, and reasons why they meet the definition of critical habitat for the Florida bonneted bat, below.

Unit 1: Peace River and surrounding areas (Charlotte, DeSoto, Hardee, and Sarasota Counties, Florida)

Unit 1 consists of 19,550 ha (48,310 ac) of lands in Charlotte, DeSoto, Hardee, and Sarasota Counties, Florida. This unit is located along the Peace River and its tributaries (e.g., Charlie Creek), south of CR-64 with the majority generally west of US-17. Unit 1 consists of approximately 4,537 ha (11,212 ac) of State-owned land, 119 ha (295 ac) of County-owned land, 13 ha (32 ac) of locally owned land, 14,087 ha (34,810 ac) of private and other lands, and 793 ha (1,960 ac) of land of unidentified ownership (table 1). The largest landholding within this unit is the RV Griffin Reserve. Other smaller conservation lands also occur within this unit (see *Conservation Lands*, Supporting Documents). We consider this unit as occupied at the time of listing based on documented presence of bonneted bats within the unit (see **Occupancy at the Time of Listing**, above).

Unit 1 contains five of the seven PBFs for the bonneted bat (i.e., PBFs 2, 3, 4, 6, and 7). While this unit contains representative forest types that support the species by providing roosting and foraging habitat, it consists of area primarily outside of the bat's core areas (i.e., does not possess all features described in PBF 1). Because of its relative small size, this unit also does not possess all features described in PBF 5. However, Unit 1 encompasses a known movement corridor (generally connecting individuals between Unit 2 and APAFR) and adds ecological diversity (a natural river corridor) to the overall proposed designated areas. In addition, the Peace River and adjacent forested lands maintain high habitat suitability, providing open water

and likely abundant prey.

The PBFs essential to the conservation of the Florida bonneted bat in Unit 1 may require special management considerations or protection due to the following: habitat loss, fragmentation, and degradation resulting from development and land conversion; impacts from land management practices (e.g., timber management and fuels reduction, prescribed fire, management of nonnative and invasive species, habitat restoration) or lack of suitable habitat management; wind energy; and pesticide use.

Unit 2: Babcock-Webb WMA, Babcock Ranch, and surrounding areas (Charlotte, Lee, and Glades Counties, Florida)

Unit 2 consists of 97,505 ha (240,941 ac) of lands in Charlotte, Lee, and Glades Counties, Florida. The majority of Unit 2 is located in Charlotte County, east of I-75; other portions are in northern Lee and western Glades Counties. This unit consists of approximately 1 ha (3 ac) of Federal land, 61,128 ha (151,050 ac) of State-owned land, 3,724 ha (9,203 ac) of County-owned land, 8 ha (21 ac) of locally owned land, 32,001 ha (79,077 ac) of private and other lands, and 642 ha (1,587 ac) of land of unidentified ownership (table 1). The largest land holdings within this unit are Babcock-Webb WMA and Babcock Ranch Preserve; other smaller conservation lands also occur within this unit (see *Conservation Lands*, Supporting Documents).

Unit 2 represents the westernmost portion of the species' core areas. This unit was occupied at the time of listing, is currently occupied, and contains all of the PBFs for the bonneted bat. Babcock-Webb WMA and surrounding areas support the largest abundance known (approximately 79 bonneted bats), and the bulk of all known roost sites (Myers, pers. comm. 2015; Gore, pers. comm. 2016; Ober, pers. comm. 2014; Braun de Torrez, pers. comm.

2016).

The PBFs essential to the conservation of the Florida bonneted bat in Unit 2 may require special management considerations or protection due to the following: habitat loss, fragmentation, and degradation resulting from development (including oil and gas exploration) and land conversion; impacts from land management practices (e.g., timber management and fuels reduction, prescribed fire, management of nonnative and invasive species, habitat restoration) or lack of suitable habitat management; impacts from coastal squeeze; and pesticide use.

Unit 3: Big Cypress and surrounding areas (Collier, Monroe, and Hendry Counties, Florida)

Unit 3 consists of 366,833 ha (906,462 ac) of lands in Collier, Monroe, and Hendry Counties, Florida. The majority of Unit 3 is located in Collier County, south of I-75; the remainder occurs in southern Hendry County and mainland portions of Monroe County. This unit consists of approximately 250,733 ha (619,573 ac) of Federal land, 10,527 ha (26,012 ac) of Tribal land, 61,869 ha (152,882 ac) of State-owned land, 3,384 ha (8,362 ac) of County-owned land, 173 ha (427 ac) of locally owned land, 38,227 ha (94,460 ac) of private and other lands, and 1,920 ha (4,745 ac) of land of unidentified ownership (table 1). The largest land holdings within Unit 3 are BCNP, PSSF, FSPSP, ENP, and FPNWR. Other smaller conservation lands also occur within this unit (see *Conservation Lands*, Supporting Documents). This unit was occupied at the time of listing, is currently occupied, and contains all of the PBFs for the bonneted bat.

Unit 3 represents the southwestern portion of the species' core areas. The species has been documented to use many locations throughout the unit (specifically, within BCNP, PSSF,

FSPSP, and FPNWR) (see table 1 of the final listing rule (78 FR 61004, October 2, 2013)). The discoveries of three natural roosts in 2015 and 2016 further demonstrate the relevance and importance of Unit 3.

The PBFs essential to the conservation of the Florida bonneted bat in Unit 3 may require special management considerations or protection due to the following: habitat loss, fragmentation, and degradation resulting from development (including oil and gas exploration) and land conversion; impacts from land management practices (e.g., timber management and fuels reduction, prescribed fire, management of nonnative and invasive species, habitat restoration) or lack of suitable habitat management; impacts from climate change and coastal squeeze; and pesticide use.

Approximately 10,527 ha (26,012 ac) of Tribal lands occur within Unit 3, including lands within the Seminole Big Cypress Reservation and the Miccosukee Sherrod Ranch. All or some of these lands may be excluded from the final critical habitat designation under section 4(b)(2) of the Act (see *Exclusions Based on Other Relevant Impacts* under the **Exclusions** section of this rule).

Unit 4: Miami-Dade Natural Areas (Miami-Dade County, Florida)

Unit 4 consists of 114,372 ha (282,620 ac) of lands in Miami-Dade County, Florida. Unit 4 consists mostly of conservation lands west of the Florida Turnpike. This unit consists of approximately 71,385 ha (176,395 ac) of Federal land, 326 ha (805 ac) of Tribal land, 26,159 ha (64,639 ac) of State-owned land, 4,210 ha (10,404 ac) of County-owned land, 114 ha (281 ac) of locally owned land, 11,496 ha (28,408 ac) of private and other lands, and 683 ha (1,688 ac) of land of unidentified ownership (table 1). The largest land holding within this unit is ENP; other

smaller conservation lands also occur within this unit (see *Conservation Lands*, Supporting Documents). This unit was occupied at the time of listing, is currently occupied, and contains all of the PBFs for the bonneted bat.

Unit 4 represents the eastern portion of the species' core areas and includes the bulk of the remaining high-quality natural habitat in the species' former strongholds on the east coast (Belwood 1992, pp. 216–217, 219; Timm and Genoways 2004, p. 857; Timm and Arroyo-Cabres 2008, p. 1; Solari 2016, pp. 1–2; see *Historical Distribution*, proposed listing rule (77 FR 60750, October 4, 2012)). This area may be the last remaining predominantly natural occupied habitat on the east coast of Florida.

The PBFs essential to the conservation of the Florida bonneted bat in Unit 4 may require special management considerations or protection due to the following: habitat loss, fragmentation, and degradation resulting from development and land conversion; impacts from land management practices (e.g., timber management and fuels reduction, prescribed fire, management of nonnative and invasive species, habitat restoration) or lack of suitable habitat management; impacts from climate change and coastal squeeze; and pesticide use.

Approximately 326 ha (805 ac) of Tribal lands occur within Unit 4, including lands that are part of the Miccosukee Resort and Gaming Center. All or some of these lands may be excluded from the final critical habitat designation under section 4(b)(2) of the Act (see *Exclusions Based on Other Relevant Impacts* under the **Exclusions** section of this rule).

Effects of Critical Habitat Designation

Section 7 Consultation

Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat of such species. In addition, section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any agency action which is likely to jeopardize the continued existence of any species proposed to be listed under the Act or result in the destruction or adverse modification of proposed critical habitat.

We published a final regulation with a revised definition of destruction or adverse modification on August 27, 2019 (84 FR 44976). Destruction or adverse modification means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species.

If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with us. Examples of actions that are subject to the section 7 consultation process are actions on State, Tribal, local, or private lands that require a Federal permit (such as a permit from the U.S. Army Corps of Engineers under section 404 of the Clean Water Act (33 U.S.C. 1251 *et seq.*) or a permit from the Service under section 10 of the Act) or that involve some other Federal action (such as funding from the Federal Highway Administration, Federal Aviation Administration, or the Federal Emergency Management Agency). Federal actions not affecting listed species or critical habitat, and actions on State, Tribal, local, or private lands that are not federally funded or authorized, do not require section 7 consultation.

Compliance with the requirements of section 7(a)(2) is documented through our issuance of:

- (1) A concurrence letter for Federal actions that may affect, but are not likely to adversely affect, listed species or critical habitat; or
- (2) A biological opinion for Federal actions that may affect and are likely to adversely affect, listed species or critical habitat.

When we issue a biological opinion concluding that a project is likely to jeopardize the continued existence of a listed species and/or destroy or adversely modify critical habitat, we provide reasonable and prudent alternatives to the project, if any are identifiable, that would avoid the likelihood of jeopardy and/or destruction or adverse modification of critical habitat. We define “reasonable and prudent alternatives” (at 50 CFR 402.02) as alternative actions identified during consultation that:

- (1) Can be implemented in a manner consistent with the intended purpose of the action,
- (2) Can be implemented consistent with the scope of the Federal agency’s legal authority and jurisdiction,
- (3) Are economically and technologically feasible, and
- (4) Would, in the Service Director’s opinion, avoid the likelihood of jeopardizing the continued existence of the listed species and/or avoid the likelihood of destroying or adversely modifying critical habitat.

Reasonable and prudent alternatives can vary from slight project modifications to extensive redesign or relocation of the project. Costs associated with implementing a reasonable and prudent alternative are similarly variable.

Regulations at 50 CFR 402.16 set forth requirements for Federal agencies to reinstate

formal consultation on previously reviewed actions. Consultation should generally be reinitiated where the Federal agency has retained discretionary involvement or control over the action (or the agency's discretionary involvement or control is authorized by law) and, subsequent to the previous consultation, we have listed a new species or designated critical habitat that may be affected by the Federal action, the action has been modified in a manner that affects the species or critical habitat in a way not considered in the previous consultation, the amount of take has exceeded what was included in the incidental take statement, or new information reveals effects of the action that may affect listed species or their critical habitat in ways that were not considered. In such situations, Federal agencies may need to request reinitiation of consultation with us; however, the regulations provide an exception to the requirement to reinitiate consultation where a new species has been listed or critical habitat designated for certain land management plans. Please refer to the regulations for a description of that exception.

Application of the "Adverse Modification" Standard

The key factor related to the destruction or adverse modification determination is whether implementation of the proposed Federal action directly or indirectly alters the designated critical habitat in a way that appreciably diminishes the value of the critical habitat as a whole for the conservation of the listed species. As discussed above, the role of critical habitat is to support PBFs essential to the conservation of a listed species and other specific areas that are essential to provide for the conservation of the species.

Section 4(b)(8) of the Act requires us to briefly evaluate and describe, in any proposed or final regulation that designates critical habitat, activities involving a Federal action that may violate 7(a)(2) of the Act by destroying or adversely modifying such habitat, or that may be

affected by such designation.

Activities that the Services may, during a consultation under section 7(a)(2) of the Act, find are likely to destroy or adversely modify critical habitat include, but are not limited to:

(1) Actions that would significantly alter roosting, foraging, or dispersal habitat. Such activities may include, but are not limited to: residential, commercial, or recreational development including associated infrastructure; clearcutting, deforestation or habitat conversion for large-scale or intensive agriculture, mining (e.g., oil / gas exploration), industry (e.g., wind energy), or other development; water diversion, drainage, or wetland loss or conversion. These activities could destroy Florida bonneted bat roosting and foraging sites (necessary for shelter and reproduction); reduce habitat conditions below what is necessary for survival and growth; and/or eliminate or reduce the habitat necessary for successful reproduction, growth, dispersal, and expansion (see *Physical or Biological Features*, above).

(2) Actions that would significantly alter vegetation structure or composition. Such activities could include, but are not limited to: removal of forest or other areas with large or mature trees and other natural areas with suitable structures (i.e., tall or mature live or dead trees, tree snags, and trees with cavities, hollows, or crevices); suppression of natural fires; prescribed fire conducted in a manner that does not insure protection of large trees and/or snags; timber management or fuel reduction (e.g., thinning); control of invasive nonnative vegetation; habitat conversions or restorations; creation or maintenance of trails or firebreaks; or clearing native vegetation for construction of residential, commercial, agricultural, industrial, or recreational development and associated infrastructure. These activities could destroy Florida bonneted bat roosting sites; reduce foraging habitat and prey base; reduce habitat conditions below what is necessary for survival and growth; and/or eliminate or reduce the habitat necessary for successful

reproduction, growth, dispersal, and expansion (see *Physical or Biological Features*, above).

(3) Actions that would significantly reduce suitability of habitat, alter behavior or movement of the Florida bonneted bat, or impact prey base (e.g., availability, abundance, density, diversity). In addition to altering habitat, vegetation, or structure (given above), this includes, but is not limited to: widespread application of pesticides; exposure to contaminants (e.g., direct or through drinking water or food chain); excessive alteration of natural lighting (that disrupts movements or foraging conditions or impacts prey); introduction of biocontrol agents; creation and operation of wind energy facilities; non-natural changes in hydrology; or other disturbances (e.g., excessive noise, excessive temperature) that impact prey or alter behavior, movement, or ability to echolocate. These activities could alter conditions beyond the species' tolerance, adversely affect individuals and their life cycles, reduce habitat suitability, or impact prey base, thereby affecting conditions necessary for survival, reproduction, growth, dispersal, and expansion (see *Physical or Biological Features*, above).

(4) Actions that would result in an increased competition for suitable roost sites or increased risk of predation. Possible actions could include, but are not limited to: removal of suitable roosting structures (e.g., mature trees or snags); management actions that discourage the retention of suitable roosting structures either now or in the future; lack of management with regard to the release of nonnative or introduced species (e.g., nonnative snakes). These activities can increase competition for tree cavities or other limited roosting habitat, introduce disease or pathogens, or increase predation, thereby affecting conditions for survival, growth, and reproduction (see *Physical or Biological Features*, above).

Exemptions

Application of Section 4(a)(3) of the Act

The Sikes Act Improvement Act of 1997 (Sikes Act) (16 U.S.C. 670a) required each military installation that includes land and water suitable for the conservation and management of natural resources to complete an INRMP by November 17, 2001. An INRMP integrates implementation of the military mission of the installation with stewardship of the natural resources found on the base. Each INRMP includes:

- (1) An assessment of the ecological needs on the installation, including the need to provide for the conservation of listed species;
- (2) A statement of goals and priorities;
- (3) A detailed description of management actions to be implemented to provide for these ecological needs; and
- (4) A monitoring and adaptive management plan.

Among other things, each INRMP must, to the extent appropriate and applicable, provide for fish and wildlife management; fish and wildlife habitat enhancement or modification; wetland protection, enhancement, and restoration where necessary to support fish and wildlife; and enforcement of applicable natural resource laws.

The National Defense Authorization Act for Fiscal Year 2004 (Pub. L. 108-136) amended the Act to limit areas eligible for designation as critical habitat. Specifically, section 4(a)(3)(B)(i) of the Act (16 U.S.C. 1533(a)(3)(B)(i)) provides that: “The Secretary shall not designate as critical habitat any lands or other geographic areas owned or controlled by the Department of Defense (DoD), or designated for its use, that are subject to an INRMP prepared under section 101 of the Sikes Act (16 U.S.C. 670a), if the Secretary determines in writing that

such plan provides a benefit to the species for which critical habitat is proposed for designation.”

We consult with the military on the development and implementation of INRMPs for installations with listed species. We analyzed INRMPs developed by military installations located within the range of the proposed critical habitat designation for the Florida bonneted bat to determine if they meet the criteria for exemption from critical habitat under section 4(a)(3) of the Act. The following area owned by DoD is covered by an INRMP within the proposed critical habitat designation.

Avon Park Air Force Range (APAFR)

The APAFR, located in Polk County, has a current and completed INRMP, signed by FWC and the Service in September 2017. The INRMP provides conservation measures for the species and management of important upland and wetland habitats on the base (U.S. Air Force 2017, pp. 9–10, 55–56, 74, 77, 90–91, 95, 97).

APAFR’s INRMP benefits the Florida bonneted bat through ongoing ecosystem management, and specifically active management of RCW habitat, which should provide habitat for the species (U.S. Air Force 2017, pp. 9–10, 55). Some major goals identified in the plan that should benefit the bonneted bat include: (1) maintaining and restoring ecosystem composition, structure, and function with a special emphasis on rare and endemic communities (e.g., pine flatwoods); (2) using ecological processes such as fire as the primary tool for restoring ecosystems; (3) managing or restoring hydrological function of floodplains, groundwater, lakes, riparian areas, springs, swamps, streams, and wetlands to protect and ensure their quality and ecological functions; (4) conserving, protecting, and recovering endangered and threatened species; and (5) identifying the presence of exotic and invasive species and implementing

programs to control or eradicate those species from the installation (U.S. Air Force 2017, pp. 9–10).

In addition, AFAPR's INRMP includes the following specific projects to benefit the bonneted bat: (1) annual acoustic surveys to determine presence of Florida bonneted bats, implemented on a 3-year rotation (covering one-third of the approximately 24,281 ha (60,000 ac) of available suitable habitat annually); (2) as-needed intensive acoustic and roost search surveys in areas identified during annual acoustic monitoring; (3) daily acoustic monitoring of all known roosts to provide long-term presence/absence and roosting activity measures; (4) retention of snags within known bonneted bat roosting habitat (except within firebreaks); and (5) invasive plant treatments, supplemented through the FWC Upland Invasive Species contracts and FWC Herbicide Bank (U.S. Air Force 2017, pp. 91, 95, and 97). The APAFR's INRMP also includes a commitment to investigate the feasibility of monitoring bonneted bat movement patterns using radio telemetry (U.S. Air Force 2017, p. 91). As part of this effort, the Air Force has worked with UF and FWC to capture and radio track bats to find a total of five natural roosts as of July 2019 (R. Aldredge, pers. comm. 2019c). The bonneted bat will also benefit from APAFR's INRMP measures guiding fire management, including wildfire suppression and adaptive/proactive prescribed fire to meet species-specific conservation measures and habitat goals (U.S. Air Force 2017, pp. 90, 95).

Based on the above considerations, and in accordance with section 4(a)(3)(B)(i) of the Act, we have determined that the identified lands are subject to the APAFR's INRMP and that conservation efforts identified in the INRMP will provide benefits to the Florida bonneted bat and the features essential to the species occurring on the base. Therefore, lands within APAFR are exempt from critical habitat designation under section 4(a)(3) of the Act. We are not

including approximately 43,740 ha (108,082 ac) of habitat in this proposed critical habitat designation because of this exemption.

Exclusions

Consideration of Impacts Under Section 4(b)(2) of the Act

Section 4(b)(2) of the Act states that the Secretary shall designate and make revisions to critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, national security impact, and any other relevant impact of specifying any particular area as critical habitat. The Secretary may exclude an area from critical habitat if he determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless he determines, based on the best scientific data available, that the failure to designate such area as critical habitat will result in the extinction of the species. In making that determination, the statute on its face, as well as the legislative history, are clear that the Secretary has broad discretion regarding which factor(s) to use and how much weight to give to any factor.

When identifying the benefits of inclusion for an area, we consider the additional regulatory benefits that area would receive due to the protection from destruction of adverse modification as a result of actions with a Federal nexus; the educational benefits of mapping essential habitat for recovery of the listed species; and any benefits that may result from a designation due to State or Federal laws that may apply to critical habitat.

When considering the benefits of exclusion, we consider, among other things, whether exclusion of a specific area is likely to result in conservation; the continuation, strengthening, or encouragement of partnerships; or implementation of a management plan. In the case of the

Florida bonneted bat, the benefits of critical habitat include public awareness of the presence of the bat and the importance of habitat protection, and, where a Federal nexus exists, increased habitat protection for the bat due to protection from adverse modification or destruction of critical habitat. Additionally, continued implementation of an ongoing management plan that provides equal to or more conservation than a critical habitat designation would reduce the benefits of including that specific area in the critical habitat designation. In practice, situations with a Federal nexus exist primarily on Federal lands or for projects funded by, undertaken by, or authorized by Federal agencies.

We evaluate the existence of a conservation plan when considering the benefits of inclusion. We consider a variety of factors, including but not limited to, whether the plan is finalized; how it provides for the conservation of the essential physical or biological features; whether there is a reasonable expectation that the conservation management strategies and actions contained in a management plan will be implemented into the future; whether the conservation strategies in the plan are likely to be effective; and whether the plan contains a monitoring program or adaptive management to ensure that the conservation measures are effective and can be adapted in the future in response to new information.

After identifying the benefits of inclusion and the benefits of exclusion, we carefully weigh the two sides to evaluate whether the benefits of exclusion outweigh those of inclusion. If our analysis indicates that the benefits of exclusion outweigh the benefits of inclusion, we then determine whether exclusion would result in extinction of the species. If exclusion of an area from critical habitat will result in extinction, we will not exclude it from the designation.

We are considering whether to exclude the following areas under section 4(b)(2) of the Act from the final critical habitat designation for the Florida bonneted bat: (1) in Unit 3,

approximately 10,527 ha (26,012 ac) of Tribal lands, including lands within the Seminole Big Cypress Reservation and the Miccosukee Sherrod Ranch; and (2) in Unit 4, approximately 326 ha (805 ac) of Tribal lands, including lands that are part of the Miccosukee Resort and Gaming Center.

However, we specifically solicit comments on the inclusion or exclusion of such areas or any other areas that may justify exclusion. In the paragraphs below, we provide a description of our consideration of these lands for exclusion under section 4(b)(2) of the Act. The final decision on whether to exclude any areas will be based on the best scientific data available at the time of the final designation, including information obtained during the comment period and information about the economic impact of designation.

Exclusions Based on Economic Impacts

Under section 4(b)(2) of the Act, we consider the economic impacts of specifying any particular area as critical habitat. In order to consider economic impacts, we prepared an analysis of the probable economic impacts of the proposed critical habitat designation and related factors.

Potential land use sectors that may be affected by the proposed critical habitat designation include agriculture; conservation/restoration; residential, commercial, industrial or recreational development and associated infrastructure; dredging; fire management; forest management including silviculture/timber; grazing; recreation; transportation; Tribal lands; utilities; energy supply, distribution, and use; and water diversion, drainage, or wetland loss or conversion. There is a Federal nexus associated with each of these economic activities when they occur on Federal lands. However, some activities on State, County, private, or other lands

may not have a Federal nexus and, therefore, may not be subject to section 7 consultations. These may include agriculture (including use of pesticides); development and utilities (including alteration of natural lighting); fire and forest management; grazing; recreation; and loss, diversion, or conversion of wetlands not regulated by the Clean Water Act. Exceptions may include: (1) lands slated for large-scale private development, which may require National Pollutant Discharge Elimination System permits from the Environmental Protection Agency or section 404 permits from the Army Corps of Engineers; (2) road-related improvements that involve U.S. Department of Transportation funding; or (3) other land-disturbing actions that require section 404 permits.

To assess the probable economic impacts of a designation, we must first evaluate specific land uses or activities and projects that may occur in the area of the critical habitat. We then must evaluate the impacts that a specific critical habitat designation may have on restricting or modifying specific land uses or activities for the benefit of the species and its habitat within the areas proposed. We then identify which conservation efforts may be the result of the species being listed under the Act versus those attributed solely to the designation of critical habitat for this particular species. The probable economic impact of a proposed critical habitat designation is analyzed by comparing scenarios both “with critical habitat” and “without critical habitat.” The “without critical habitat” scenario represents the baseline for the analysis, which includes the existing regulatory and socio-economic burden imposed on landowners, managers, or other resource users potentially affected by the designation of critical habitat (e.g., under the Federal listing as well as other Federal, State, and local regulations). The baseline, therefore, represents the costs of all efforts attributable to the listing of the species under the Act (i.e., conservation of the species and its habitat incurred regardless of whether critical habitat is designated). The

“with critical habitat” scenario describes the incremental impacts associated specifically with the designation of critical habitat for the species. The incremental conservation efforts and associated impacts would not be expected without the designation of critical habitat for the species. In other words, the incremental costs are those attributable solely to the designation of critical habitat, above and beyond the baseline costs. These are the costs we use when evaluating the benefits of inclusion and exclusion of particular areas from the final designation of critical habitat should we choose to conduct a discretionary 4(b)(2) exclusion analysis.

For this designation, we developed an incremental effects memorandum (IEM; Service 2020) considering the probable incremental economic impacts that may result from this proposed designation of critical habitat. The information contained in our IEM was then used to develop a screening analysis of the probable effects of the designation of critical habitat for the Florida bonneted bat (Industrial Economics, Incorporated (IEc) 2020). We began by conducting a screening analysis of the proposed designation of critical habitat in order to focus our analysis on the key factors that are likely to result in incremental economic impacts. The purpose of the screening analysis is to filter out the geographic areas in which the critical habitat designation is unlikely to result in probable incremental economic impacts. In particular, the screening analysis considers baseline costs (i.e., absent critical habitat designation) and includes probable economic impacts where land and water use may be subject to conservation plans, land management plans, best management practices, or regulations that protect the habitat area as a result of the Federal listing status of the species. The screening analysis filters out particular areas of critical habitat that are already subject to such protections and are, therefore, unlikely to incur incremental economic impacts. Ultimately, the screening analysis allows us to focus our analysis on evaluating the specific areas or sectors that may incur probable incremental economic impacts as

a result of the designation. The screening analysis also assesses whether units are unoccupied by the species and may require additional management or conservation efforts as a result of the critical habitat designation for the species which may incur incremental economic impacts. This screening analysis combined with the information contained in our IEM are what we consider our DEA of the proposed critical habitat designation for the Florida bonneted bat and is summarized in the narrative below.

Executive Orders (E.O.) 12866 and 13563 direct Federal agencies to assess the costs and benefits of available regulatory alternatives in quantitative (to the extent feasible) and qualitative terms. Consistent with the E.O. regulatory analysis requirements, our effects analysis under the Act may take into consideration impacts to both directly and indirectly impacted entities, where practicable and reasonable. If sufficient data are available, we assess to the extent practicable the probable impacts to both directly and indirectly impacted entities. As part of our screening analysis, we considered the types of economic activities that are likely to occur within the areas likely affected by the critical habitat designation. Our IEM identified probable incremental economic impacts that may result from the proposed designation of critical habitat for the Florida bonneted bat associated with the following categories of activities: development; oil and gas exploration; wind energy; land management; prescribed fire; timber management and fuels reduction; grazing; wildlife, game, or listed species management; habitat restoration; control of nonnative species; pesticide application; and recreational activities. We considered each industry or category individually. Additionally, we considered whether their activities have any Federal involvement. Critical habitat designation will not affect activities that do not have any Federal involvement; designation of critical habitat only affects activities conducted, funded, permitted, or authorized by Federal agencies. In areas where the Florida bonneted bat is present, Federal

agencies already are required to consult with the Service under section 7 of the Act on activities they fund, permit, or implement that may affect the species. If we finalize this proposed critical habitat designation, consultations to avoid the destruction or adverse modification of critical habitat would be incorporated into the existing consultation process.

In our IEM, we attempted to clarify the distinction between the effects that result from the species being listed and those attributable to the critical habitat designation (i.e., difference between the jeopardy and adverse modification standards) for the Florida bonneted bat's critical habitat. The following specific circumstances in this case help to inform our evaluation: (1) the essential PBFs identified for critical habitat are the same features essential for the life requisites of the species, and (2) any actions that would result in sufficient harm or harassment to constitute jeopardy to the Florida bonneted bat would also likely adversely affect the essential PBFs of critical habitat. The IEM outlines our rationale concerning this limited distinction between baseline conservation efforts and incremental impacts of the designation of critical habitat for this species. This evaluation of the incremental effects has been used as the basis to evaluate the probable incremental economic impacts of this proposed designation of critical habitat.

Because all areas are occupied, the economic impacts of implementing the rule through section 7 of the Act will most likely be limited to additional administrative effort to consider adverse modification. This finding is based on the following factors:

- Any activities with a Federal nexus occurring within occupied habitat will be subject to section 7 consultation requirements regardless of critical habitat designation, due to the presence of the listed species; and
- In most cases, project modifications requested to avoid adverse modification are likely to be the same as those needed to avoid jeopardy in occupied habitat.

Our analysis considers the potential need to consult on development, transportation, land management, habitat restoration, and other activities authorized, undertaken, or funded by Federal agencies within critical habitat. The total incremental section 7 costs associated with the designation of the proposed units are estimated to be less than \$239,000 per year (IEc 2020, pp. 2, 9). While the proposed critical habitat area is relatively large, totaling 598,261 ha (1,478,333 ac), the strong baseline protections that are already anticipated to exist for this species due to its listed status, the existence of a consultation area map that alerts managing agencies about the location of the species and its habitat, and the presence of other listed species in the area keep the costs comparatively low. The highest costs are expected in Unit 3, associated with anticipated future consultations within BCNP and ENP. However, based on recent changes to Service regulations, it is possible that some of these consultations, which may include reinitiations of land use plans, may not be required.

The designation of critical habitat may trigger additional regulatory changes. For example, the designation may cause other Federal, State, or local permitting or regulatory agencies to expand or change standards or requirements. Regulatory uncertainty generated by critical habitat may also have impacts. For example, landowners or buyers may perceive that the rule will restrict land or water use activities in some way and therefore value the use of the land less than they would have absent critical habitat. This is a perception, or stigma, effect of critical habitat on markets. While the screening analysis was unable to quantify the degree to which the public's perception of possible restrictions on the use of private land designated as critical habitat could affect private property values, IEC (2020, p. 10) recognized that a number of factors may already result in perception-related effects on these private lands, including awareness of the species due to a previously existing consultation area map, and the presence of a large number of

co-occurring listed species and existing critical habitat in these areas.

At this time, we are not considering any specific areas for exclusion from the final designation under section 4(b)(2) of the Act based on economic impacts. As we stated earlier, we are soliciting data and comments from the public on the DEA, as well as all aspects of the proposed rule and our amended required determinations. During the development of a final designation, we will consider any information currently available or received during the public comment period regarding the economic impacts of the proposed designation and will determine whether any specific areas should be excluded from the final critical habitat designation under authority of section 4(b)(2) and our implementing regulations at 50 CFR 424.19.

Impacts on National Security and Homeland Security

Section 4(a)(3)(B)(i) of the Act may not apply to all DoD lands or areas that pose potential national-security concerns (e.g., a DoD installation that is in the process of revising its INRMP for a newly listed species or a species previously not covered). Nevertheless, when designating critical habitat under section 4(b)(2), the Service must consider impacts on national security, including homeland security, on lands or areas not covered by section 4(a)(3)(B)(i). Accordingly, we will always consider for exclusion from the designation areas for which DoD, Department of Homeland Security (DHS), or another Federal agency has requested exclusion based on an assertion of national-security or homeland-security concerns.

We cannot, however, automatically exclude requested areas. When DoD, DHS, or another Federal agency requests exclusion from critical habitat on the basis of national-security or homeland-security impacts, it must provide a reasonably specific justification of an incremental impact on national security that would result from the designation of that specific

area as critical habitat. That justification could include demonstration of probable impacts, such as impacts to ongoing border-security patrols and surveillance activities, or a delay in training or facility construction, as a result of compliance with section 7(a)(2) of the Act. If the agency requesting the exclusion does not provide us with a reasonably specific justification, we will contact the agency to recommend that it provide a specific justification or clarification of its concerns relative to the probable incremental impact that could result from the designation. If the agency provides a reasonably specific justification, we will defer to the expert judgment of DoD, DHS, or another Federal agency as to: (1) Whether activities on its lands or waters, or its activities on other lands or waters, have national-security or homeland-security implications; (2) the importance of those implications; and (3) the degree to which the cited implications would be adversely affected in the absence of an exclusion. In that circumstance, in conducting a discretionary 4(b)(2) exclusion analysis, we will give great weight to national-security and homeland-security concerns in analyzing the benefits of exclusion.

Under section 4(b)(2) of the Act, we consider whether there are lands where a national security impact might exist. In preparing this proposal, we have determined that some lands within the proposed designation of critical habitat for the Florida bonneted bat are owned or managed by the DoD. We already discussed one area (APAFR) with an approved INRMP under *Application of Section 4(a)(3) of the Act*, above. There are other DoD lands (owned by the U.S. Army Corps of Engineers) within the proposed critical habitat designation area. However, to date, the U.S. Army Corps of Engineers has not expressed concern that the designation of these lands would have implications for national security. During the development of a final designation, we will consider any information currently available or received during the public comment period regarding the national security impacts of the proposed designation and will

determine whether any specific areas should be excluded from the final critical habitat designation under authority of section 4(b)(2) and our implementing regulations at 50 CFR 424.19.

Exclusions Based on Other Relevant Impacts

Under section 4(b)(2) of the Act, we consider any other relevant impacts, in addition to economic impacts and impacts on national security. We consider a number of factors including whether there are permitted conservation plans covering the species in the area such as HCPs, safe harbor agreements, or candidate conservation agreements with assurances, or whether there are non-permitted conservation agreements and partnerships that would be encouraged by designation of, or exclusion from, critical habitat. In addition, we look at the existence of Tribal conservation plans and partnerships and consider the government-to-government relationship of the United States with Tribal entities. We also consider any social impacts that might occur because of the designation. We evaluate each potential exclusion on a case-by-case basis to determine whether the benefits of exclusion may outweigh the benefits of inclusion, with the understanding that we must designate such areas if the failure to do so would result in the extinction of the Florida bonneted bat.

The FWC's Species Action Plan (2013) describes actions necessary to improve the conservation status of the Florida bonneted bat, and a summary of the plan will be included in the Imperiled Species Management Plan, in satisfaction of management plan requirements in chapter 68A-27, Florida Administrative Code, Rules Relating to Endangered or Threatened Species (FWC 2013, p. iii). The management planning process relies heavily on stakeholder input and partner support (FWC 2013, p. iii). The plan is voluntary and non-binding, and

dependent upon the FWC and other agencies, organizations, and other partners (FWC 2013, entire). Most of the actions involve monitoring and research, and are not location or habitat-specific (FWC 2013, pp. 24–26). Therefore, we are not proposing to exclude any units based on this plan.

We seek information regarding any and all types of conservation programs and plans relevant to the protection of proposed critical habitat units for the Florida bonneted bat and which may meet the criteria for exclusion under section 4(b)(2) of the Act. Such programs and plans may include conservation easements, management agreements, tax incentive programs, or any other plan or program, particularly those programs that include management actions that benefit the species. When we evaluate a conservation or management plan during our consideration of the benefits of exclusion, depending on the type of conservation program, we assess a variety of factors, including, but not limited to: whether the plan is finalized and was subject to compliance with the National Environmental Policy Act (42 U.S.C. 4321 et seq.); the degree to which the plan or program provides for the conservation of the essential physical or biological features; whether there is a reasonable expectation that the conservation management strategies and actions contained in the plan will be implemented into the future; and whether the plan contains a monitoring program or adaptive management to ensure that the conservation measures are effective and can be adapted in the future in response to new information. We will evaluate conservation and management plans for any area identified based on information received during the public comment period, to determine whether the benefits of exclusion may outweigh the benefits of inclusion. Please see **Information Requested**, above, for instructions on how to submit comments.

There are several Executive Orders, Secretarial Orders, and policies that relate to working with Tribes. These guidance documents generally confirm our trust responsibilities to Tribes, recognize that Tribes have sovereign authority to control Tribal lands, emphasize the importance of developing partnerships with Tribal governments, and direct the Service to consult with Tribes on a government-to-government basis.

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination With Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with Tribes in developing programs for healthy ecosystems, to acknowledge that Tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to Tribes. When we undertake a discretionary exclusion analysis, we will always consider exclusions of Tribal lands under section 4(b)(2) of the Act prior to finalizing a designation of critical habitat, and will give great weight to Tribal concerns in analyzing the benefits of exclusion.

Tribal lands in Florida are included in this proposed designation of critical habitat. Using the criteria found in **Criteria Used to Identify Critical Habitat**, above, we have determined that there are lands belonging to both the Seminole Tribe of Florida and the Miccosukee Tribe of Indians of Florida that were occupied by the Florida bonneted bat at the time of listing that contain the features essential for the conservation of the species. We will seek government-to-

government consultation with these Tribes throughout the public comment period and during development of the final designation of Florida bonneted bat critical habitat. We will consider these areas for exclusion from the final critical habitat designation to the extent consistent with the requirements of section 4(b)(2) of the Act. On September 20, 2013, in an effort to ensure early coordination, we notified Tribal partners of our intention to make a proposed critical habitat designation and requested information. More recently, we have again informed both Tribes of how we are evaluating section 4(b)(2) of the Act and of our interest in consulting with them on a government-to-government basis.

Some areas within the proposed designation are included in lands managed by the Seminole Tribe of Florida and Miccosukee Tribe of Indians of Florida (see Units 3 and 4 descriptions; see also **Government-to-Government Relations with Tribes**, below), constituting a total of 10,852 ha (26,817 ac) of Tribal land being proposed as critical habitat. In this proposed rule, we are seeking input from the public as to whether or not the Secretary should exclude these or other areas under management that benefit the Florida bonneted bat from the final critical habitat designation. For example, the Seminole Tribe has conservation measures in place that support the Florida bonneted bat and its habitat (e.g., limit impacts to potential roost trees during prescribed burns and home site/access road construction, maintain bonneted bat habitat through prescribed burning and construction of bat houses) (Seminole Tribe of Florida 2012, pp. 106–109). A total of 10,852 ha (26,817 ac) of Tribal land could potentially be excluded. Please see **Information Requested**, above, for instructions on how to submit comments.

At this time, other than Tribal lands, we are not considering any specific areas for exclusion from the final designation under section 4(b)(2) of the Act based on partnerships, management, or protection afforded by cooperative management efforts. We have also

determined that there are no HCPs applicable to areas proposed for designation. During the development of a final designation, we will consider any information currently available or received during the public comment period regarding other relevant impacts of the proposed designation and will determine whether any specific areas should be excluded from the final critical habitat designation under authority of section 4(b)(2) and our implementing regulations at 50 CFR 424.19.

Peer Review

In accordance with our July 1, 1994, peer review policy (59 FR 34270; July 1, 1994), the Service's August 22, 2016, Director's Memo on the Peer Review Process, and the Office of Management and Budget's December 16, 2004, Final Information Quality Bulletin for Peer Review (revised June 2012), we will seek the expert opinions of at least three appropriate and independent specialists regarding this proposed rule. The purpose of peer review is to ensure that our critical habitat designation is based on scientifically sound data and analyses. We have invited these peer reviewers to comment during this public comment period.

We will consider all comments and information received during this comment period on this proposed rule during our preparation of a final determination. Accordingly, the final decision may differ from this proposal.

Public Hearing

Section 4(b)(5) of the Act provides for a public hearing on this proposal, if requested. Requests must be received within 45 days after the date of publication of this proposed rule in the *Federal Register* (see **DATES**, above). Such requests must be sent to the address shown in

FOR FURTHER INFORMATION CONTACT. We will schedule a public hearing on this proposal, if requested, and announce the date, time, and place of the hearing, as well as how to obtain reasonable accommodations, in the *Federal Register* and local newspapers at least 15 days before the hearing. For the immediate future, we will provide these public hearings using webinars that will be announced on the Service's website, in addition to the Federal Register. The use of these virtual public hearings is consistent with our regulation at 50 CFR 424.16(c)(3).

Required Determinations

Regulatory Planning and Review (Executive Orders 12866 and 13563)

Executive Order 12866 provides that the Office of Information and Regulatory Affairs (OIRA) will review all significant rules. The Office of Information and Regulatory Affairs has waived their review regarding their significance determination of this proposed rule.

Executive Order 13563 reaffirms the principles of E.O. 12866 while calling for improvements in the nation's regulatory system to promote predictability, to reduce uncertainty, and to use the best, most innovative, and least burdensome tools for achieving regulatory ends. The executive order directs agencies to consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public where these approaches are relevant, feasible, and consistent with regulatory objectives. E.O. 13563 emphasizes further that regulations must be based on the best available science and that the rulemaking process must allow for public participation and an open exchange of ideas. We have developed this rule in a manner consistent with these requirements.

Executive Order 13771

We do not believe this proposed rule is an E.O. 13771 ("Reducing Regulation and

Controlling Regulatory Costs”) (82 FR 9339, February 3, 2017) regulatory action because we believe this rule is not significant under E.O. 12866; however, the Office of Information and Regulatory Affairs has waived their review regarding their E.O. 12866 significance determination of this proposed rule.

Regulatory Flexibility Act (5 U.S.C. 601 et seq.)

Under the Regulatory Flexibility Act (RFA), as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA; 5 U.S.C. 801 *et seq.*), whenever an agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effects of the rule on small entities (i.e., small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of the agency certifies the rule will not have a significant economic impact on a substantial number of small entities. The SBREFA amended the RFA to require Federal agencies to provide a certification statement of the factual basis for certifying that the rule will not have a significant economic impact on a substantial number of small entities.

According to the Small Business Administration, small entities include small organizations such as independent nonprofit organizations; small governmental jurisdictions, including school boards and city and town governments that serve fewer than 50,000 residents; and small businesses (13 CFR 121.201). Small businesses include manufacturing and mining concerns with fewer than 500 employees, wholesale trade entities with fewer than 100 employees, retail and service businesses with less than \$5 million in annual sales, general and heavy construction businesses with less than \$27.5 million in annual business, special trade

contractors doing less than \$11.5 million in annual business, and agricultural businesses with annual sales less than \$750,000. To determine if potential economic impacts to these small entities are significant, we considered the types of activities that might trigger regulatory impacts under this designation as well as types of project modifications that may result. In general, the term “significant economic impact” is meant to apply to a typical small business firm’s business operations.

Under the RFA, as amended, and as understood in the light of recent court decisions, Federal agencies are required to evaluate the potential incremental impacts of rulemaking only on those entities directly regulated by the rulemaking itself and, therefore, are not required to evaluate the potential impacts to indirectly regulated entities. The regulatory mechanism through which critical habitat protections are realized is section 7 of the Act, which requires Federal agencies, in consultation with the Service, to ensure that any action authorized, funded, or carried out by the Agency is not likely to destroy or adversely modify critical habitat. Therefore, under section 7, only Federal action agencies are directly subject to the specific regulatory requirement (avoiding destruction and adverse modification) imposed by critical habitat designation. Consequently, it is our position that only Federal action agencies would be directly regulated if we adopt the proposed critical habitat designation. There is no requirement under the RFA to evaluate the potential impacts to entities not directly regulated. Moreover, Federal agencies are not small entities. Therefore, because no small entities would be directly regulated by this rulemaking, the Service certifies that, if made final as proposed, the proposed critical habitat designation will not have a significant economic impact on a substantial number of small entities.

In summary, we have considered whether the proposed designation would result in a

significant economic impact on a substantial number of small entities. For the above reasons and based on currently available information, we certify that, if made final, the proposed critical habitat designation will not have a significant economic impact on a substantial number of small business entities. Therefore, an initial regulatory flexibility analysis is not required.

Executive Order 13771

This proposed rule is not an Executive Order (E.O.) 13771 (“Reducing Regulation and Controlling Regulatory Costs”) (82 FR 9339, February 3, 2017) regulatory action because this rule is not significant under E.O. 12866.

Energy Supply, Distribution, or Use—Executive Order 13211

Executive Order 13211 (Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use) requires agencies to prepare Statements of Energy Effects when undertaking certain actions. In our economic analysis, we did not find that this proposed critical habitat designation would significantly affect energy supplies, distribution, or use. As most of the area included in the proposed critical habitat designation occurs on conservation lands (approximately 82 percent), the likelihood of energy development within critical habitat is low. Therefore, this action is not a significant energy action, and no Statement of Energy Effects is required.

Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.)

In accordance with the Unfunded Mandates Reform Act, we make the following findings:

(1) This rule would not produce a Federal mandate. In general, a Federal mandate is a

provision in legislation, statute, or regulation that would impose an enforceable duty upon State, local, or Tribal governments, or the private sector, and includes both “Federal intergovernmental mandates” and “Federal private sector mandates.” These terms are defined in 2 U.S.C. 658(5)–(7). “Federal intergovernmental mandate” includes a regulation that “would impose an enforceable duty upon State, local, or Tribal governments” with two exceptions. It excludes “a condition of Federal assistance.” It also excludes “a duty arising from participation in a voluntary Federal program,” unless the regulation “relates to a then-existing Federal program under which \$500,000,000 or more is provided annually to State, local, and Tribal governments under entitlement authority,” if the provision would “increase the stringency of conditions of assistance” or “place caps upon, or otherwise decrease, the Federal Government’s responsibility to provide funding,” and the State, local, or Tribal governments “lack authority” to adjust accordingly. At the time of enactment, these entitlement programs were: Medicaid; Aid to Families with Dependent Children work programs; Child Nutrition; Food Stamps; Social Services Block Grants; Vocational Rehabilitation State Grants; Foster Care, Adoption Assistance, and Independent Living; Family Support Welfare Services; and Child Support Enforcement. “Federal private sector mandate” includes a regulation that “would impose an enforceable duty upon the private sector, except (i) a condition of Federal assistance or (ii) a duty arising from participation in a voluntary Federal program.”

The designation of critical habitat does not impose a legally binding duty on non-Federal Government entities or private parties. Under the Act, the only regulatory effect is that Federal agencies must ensure that their actions do not destroy or adversely modify critical habitat under section 7. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be

indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. Furthermore, to the extent that non-Federal entities are indirectly impacted because they receive Federal assistance or participate in a voluntary Federal aid program, the Unfunded Mandates Reform Act would not apply, nor would critical habitat shift the costs of the large entitlement programs listed above onto State governments.

(2) We do not believe that this rule would significantly or uniquely affect small governments because it will not produce a Federal mandate of \$100 million or greater in any year, that is, it is not a “significant regulatory action” under the Unfunded Mandates Reform Act. The economic analysis concludes that incremental impacts may primarily occur due to administrative costs of section 7 consultations for land management or habitat restoration and transportation projects; however, these are not expected to significantly affect small governments. Incremental impacts stemming from various species conservation and development control activities are expected to be borne by the Federal Government, State of Florida, and Miami-Dade County, which are not considered small governments. Consequently, we do not believe that the critical habitat designation would significantly or uniquely affect small government entities. As such, a Small Government Agency Plan is not required.

Takings—Executive Order 12630

In accordance with E.O. 12630 (Government Actions and Interference with Constitutionally Protected Private Property Rights), we have analyzed the potential takings implications of designating critical habitat for the Florida bonneted bat in a takings implications assessment. The Act does not authorize the Service to regulate private actions on private lands

or confiscate private property as a result of critical habitat designation. Designation of critical habitat does not affect land ownership, or establish any closures, or restrictions on use of or access to the designated areas. Furthermore, the designation of critical habitat does not affect landowner actions that do not require Federal funding or permits, nor does it preclude development of habitat conservation programs or issuance of incidental take permits to permit actions that do require Federal funding or permits to go forward. However, Federal agencies are prohibited from carrying out, funding, or authorizing actions that would destroy or adversely modify critical habitat. A takings implications assessment has been completed and concludes that this designation of critical habitat for the Florida bonneted bat does not pose significant takings implications for lands within or affected by the designation.

Federalism—Executive Order 13132

In accordance with E.O. 13132 (Federalism), this proposed rule does not have significant Federalism effects. A federalism summary impact statement is not required. In keeping with Department of the Interior and Department of Commerce policy, we request information from, and coordinated development of this proposed critical habitat designation with, appropriate State resource agencies in Florida. From a federalism perspective, the designation of critical habitat directly affects only the responsibilities of Federal agencies. The Act imposes no other duties with respect to critical habitat, either for States and local governments, or for anyone else. As a result, the rule does not have substantial direct effects either on the States, or on the relationship between the national government and the States, or on the distribution of powers and responsibilities among the various levels of government. The designation may have some benefit to these governments because the areas that contain the features essential to the

conservation of the species are more clearly defined, and the physical and biological features of the habitat necessary to the conservation of the species are specifically identified. This information does not alter where and what federally sponsored activities may occur. However, it may assist these local governments in long-range planning (because these local governments no longer have to wait for case-by-case section 7 consultations to occur).

Where State and local governments require approval or authorization from a Federal agency for actions that may affect critical habitat, consultation under section 7(a)(2) would be required. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency.

Civil Justice Reform—Executive Order 12988

In accordance with Executive Order 12988 (Civil Justice Reform), the Office of the Solicitor has determined that the rule does not unduly burden the judicial system and that it meets the requirements of sections 3(a) and 3(b)(2) of the Order. We have proposed designating critical habitat in accordance with the provisions of the Act. To assist the public in understanding the habitat needs of the species, the rule identifies the elements of PBFs essential to the conservation of the species. The designated areas of critical habitat are presented on maps, and the rule provides several options for the interested public to obtain more detailed location information, if desired.

Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.)

This rule does not contain information collection requirements, and a submission to the

Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*) is not required. We may not conduct or sponsor and you are not required to respond to a collection of information unless it displays a currently valid OMB control number.

National Environmental Policy Act (42 U.S.C. 4321 et seq.)

It is our position that, outside the jurisdiction of the U.S. Court of Appeals for the Tenth Circuit, we do not need to prepare environmental analyses pursuant to the National Environmental Policy Act in connection with designating critical habitat under the Act. We published a notice outlining our reasons for this determination in the *Federal Register* on October 25, 1983 (48 FR 49244). This position was upheld by the U.S. Court of Appeals for the Ninth Circuit (*Douglas County v. Babbitt*, 48 F.3d 1495 (9th Cir. 1995), cert. denied 516 U.S. 1042 (1996)).]

Government-to-Government Relationship with Tribes

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with tribes in developing programs for healthy ecosystems, to acknowledge that tribal lands are not subject to the same controls as Federal

public lands, to remain sensitive to Indian culture, and to make information available to tribes. Some areas within the proposed designation are included in lands managed by the Seminole Tribe of Florida and Miccosukee Tribe of Indians of Florida (see Units 3 and 4 descriptions; see also *Exclusions Based on Other Relevant Impacts*, above), constituting a total of 10,852 ha (26,817 ac) of Tribal land being proposed as critical habitat. We will continue to work with tribal entities during the development of a final rule for the designation of critical habitat for the Florida bonneted bat.

Clarity of the Rule

We are required by Executive Orders 12866 and 12988 and by the Presidential Memorandum of June 1, 1998, to write all rules in plain language. This means that each rule we publish must:

- (1) Be logically organized;
- (2) Use the active voice to address readers directly;
- (3) Use clear language rather than jargon;
- (4) Be divided into short sections and sentences; and
- (5) Use lists and tables wherever possible.

If you feel that we have not met these requirements, send us comments by one of the methods listed in **ADDRESSES**. To better help us revise the rule, your comments should be as specific as possible. For example, you should tell us the numbers of the sections or paragraphs that are unclearly written, which sections or sentences are too long, the sections where you feel lists or tables would be useful, etc.

References Cited

A complete list of references cited in this rulemaking is available on the Internet at <http://www.regulations.gov> in Docket No. FWS–R4–ES–2019–0106 and upon request from the South Florida Ecological Services Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this proposed rulemaking are the staff members of the South Florida Ecological Services Office.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Proposed Regulation Promulgation

Accordingly, we propose to amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 1531–1544; and 4201–4245, unless otherwise noted.

2. In § 17.11(h), revise the entry for “Bat, Florida bonneted” under “MAMMALS” in the

List of Endangered and Threatened Wildlife to read as follows:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Common name	Scientific name	Where listed	Status	Listing citations and applicable rules
MAMMALS				
* * * * *				
Bat, Florida bonneted	<i>Eumops floridanus</i>	Wherever found	E	78 FR 61003, 10/2/2013; 50 CFR 17.95(a). ^{CH}
* * * * *				

3. In § 17.95, amend paragraph (a) by adding an entry for “Florida Bonneted Bat (*Eumops floridanus*)” in the same alphabetical order that the species appears in the table at § 17.11 (h), to read as follows:

§ 17.95 Critical habitat—fish and wildlife.

(a) *Mammals*.

FLORIDA BONNETED BAT (*EUMOPS FLORIDANUS*)

(1) Critical habitat units are depicted for Charlotte, Collier, DeSoto, Glades, Hardee, Hendry, Lee, Miami-Dade, Monroe, and Sarasota Counties, Florida, on the maps in this entry.

(2) Within these areas, the physical or biological features essential to the conservation of Florida bonneted bat consist of one or more of the following components:

(i) Representative forest types (all age classes) that support the Florida bonneted bat by providing roosting and foraging habitat within its core areas (i.e., Polk, Charlotte, Lee, Collier, Monroe, and Miami-Dade Counties), including:

(A) Pine flatwoods;

- (B) Scrubby pine flatwoods;
- (C) Pine rocklands;
- (D) Royal palm hammocks;
- (E) Mixed or hardwood hammocks;
- (F) Cypress;
- (G) Mixed or hardwood wetlands;
- (H) Mangroves (mature and pristine);
- (I) Cabbage palms; and
- (J) Sand pine scrub.

(ii) Habitat that provides for roosting and rearing of offspring; such habitat provides structural features for rest, digestion of food, social interaction, mating, rearing of young, protection from sunlight and adverse weather conditions, and cover to reduce predation risks for adults and young, and includes forest and other areas with tall or mature trees and other natural areas with suitable structures, which are generally characterized by:

(A) Tall or mature live or dead trees, tree snags, and trees with cavities, hollows, crevices, or loose bark, including, but not limited to, trees greater than 10 meters (33 feet) in height, greater than 20 centimeters (8 inches) in diameter at breast height, with cavities greater than 5 meters (16 feet) high off the ground;

(B) High incidence of tall or mature live trees with various deformities (e.g., large cavities, hollows, broken tops, loose bark, and other evidence of decay);

(C) Sufficient open space for Florida bonneted bats to fly; areas may include open or semi-open canopy, canopy gaps, and edges, or above the canopy, which provide relatively uncluttered conditions; and/or

(D) Rock crevices.

(iii) Habitat that provides for foraging, which may vary widely across the Florida bonneted bat's range, in accordance with ecological conditions, seasons, and disturbance regimes that influence vegetation structure and prey species distributions. Foraging habitat may be separate and relatively far distances from roosting habitat. Foraging habitat consists of:

(A) Sources for drinking water and prey, including open fresh water and permanent or seasonal freshwater wetlands, in natural or rural areas (non-urban areas);

(B) Wetland and upland forests, open freshwater wetlands, and wetland and upland shrub (which provide a prey base and suitable foraging conditions (i.e., open habitat structure));

(C) Natural or semi-natural habitat patches in urban or residential areas that contribute to prey base and provide suitable foraging conditions (i.e., open habitat structure); and/or

(D) The presence and abundance of the bat's prey (i.e., large, flying insects), in sufficient quantity, availability, and diversity necessary for reproduction, development, growth, and survival.

(iv) A dynamic disturbance regime (natural or artificial) (e.g., fire, hurricanes) that maintains and regenerates forested habitat, including plant communities, open habitat structure, and temporary gaps, which is conducive to promoting a continual supply of roosting sites, prey items, and suitable foraging conditions.

(v) Large patches (more than 40,470 hectares (100,000 acres)) of forest and associated natural or semi-natural habitat types that represent functional ecosystems with a reduced influence from humans (i.e., areas that shield the bat from human disturbance, habitat loss and degradation).

(vi) Corridors, consisting of roosting and foraging habitat, that allow for population maintenance and expansion, dispersal, and connectivity among and between geographic areas for natural and adaptive movements, including those necessitated by climate change.

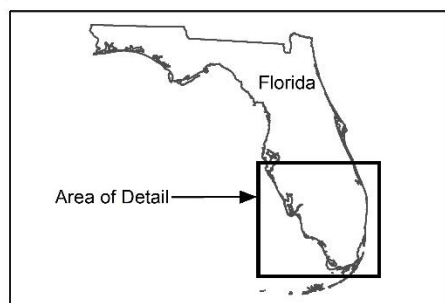
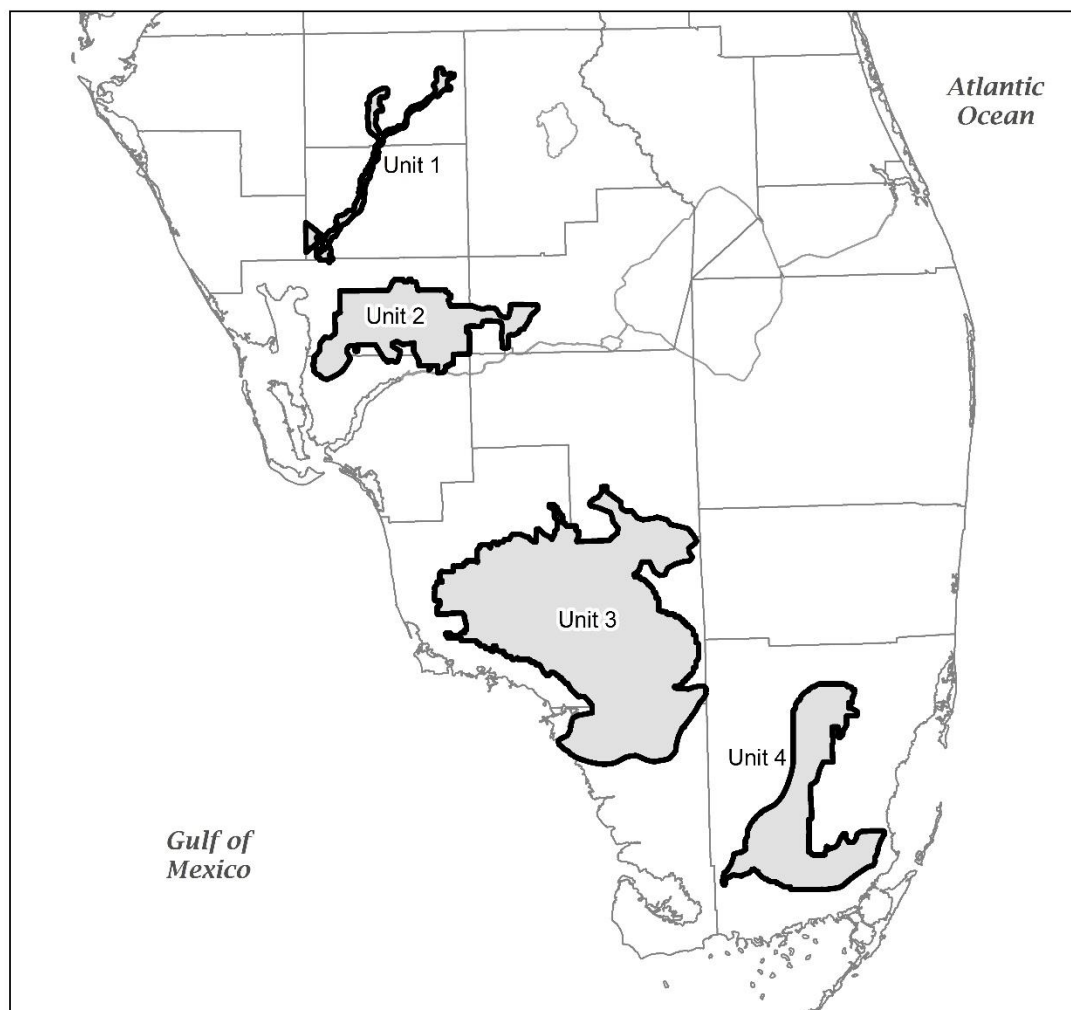
(vii) A subtropical climate that provides tolerable conditions for the species, such that normal behavior, successful reproduction, and rearing of offspring are possible.

(3) Critical habitat does not include human-made structures (such as buildings, aqueducts, runways, roads, and other paved areas) and the land on which they are located existing within the legal boundaries on the effective date of the final rule.

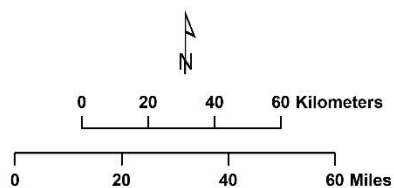
(4) *Critical habitat map units.* Data layers defining map units were created using ESRI ArcGIS mapping software along with various spatial data layers. ArcGIS was also used to calculate the size of habitat areas. The projection used in mapping and calculating distances and locations within the units was North American Albers Equal Area Conic, NAD 83. The maps in this entry, as modified by any accompanying regulatory text, establish the boundaries of the critical habitat designation. The coordinates or plot points or both on which each map is based are available to the public at the Service's Internet site, <http://www.fws.gov/verobeach/>, at <http://www.regulations.gov> at Docket No. FWS-R4-ES-2019-0106, and at the field office responsible for this designation. You may obtain field office location information by contacting one of the Service regional offices, the addresses of which are listed at 50 CFR 2.2.

(5) *Note:* Index map follows:

Index Map of Critical Habitat Units for
Florida Bonneted Bat (*Eumops floridanus*), Florida



■ Critical Habitat

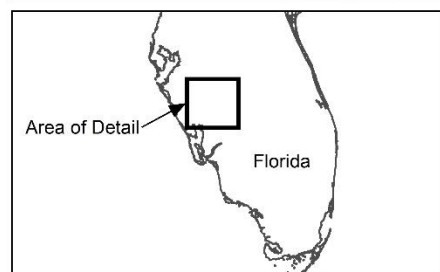
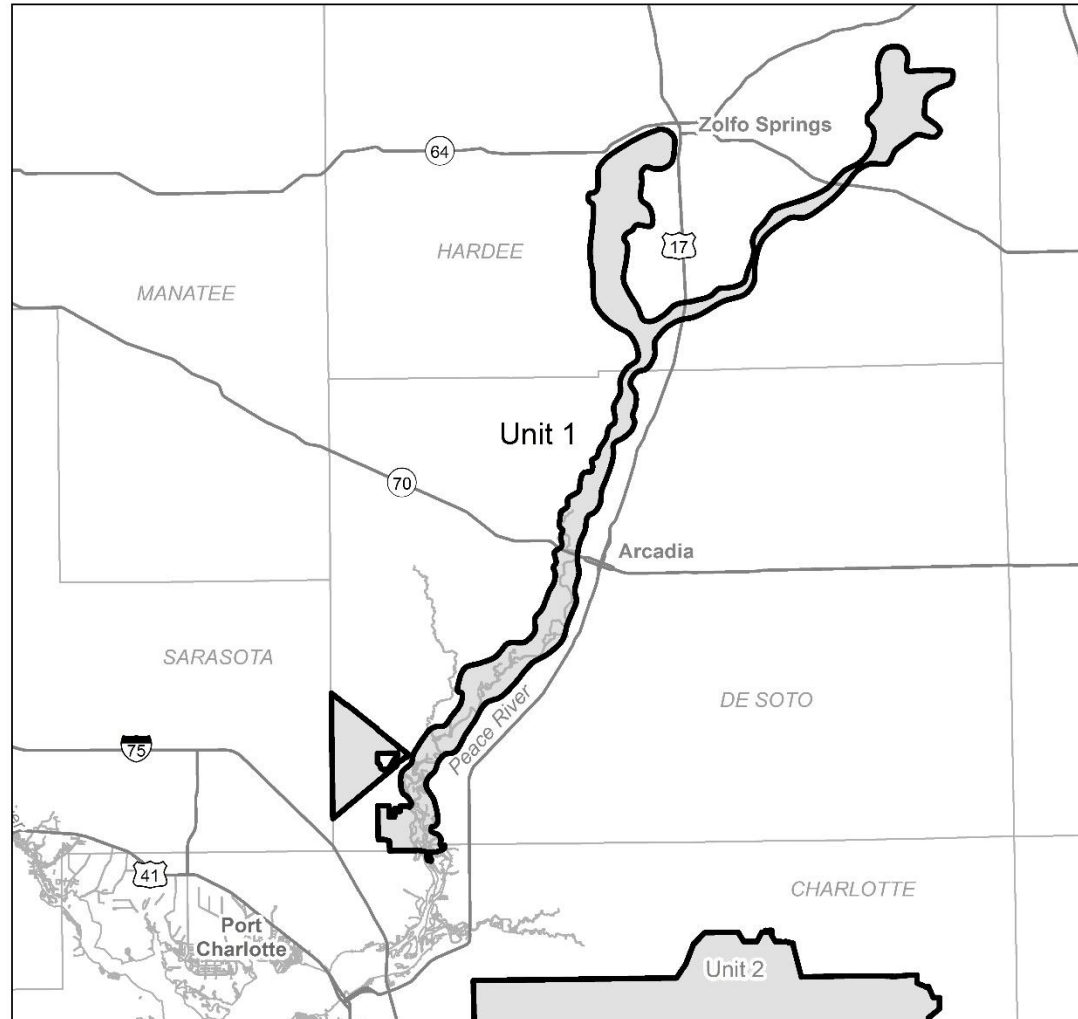


(6) Unit 1: Peace River and surrounding areas; Charlotte, DeSoto, Hardee, and Sarasota Counties, Florida.

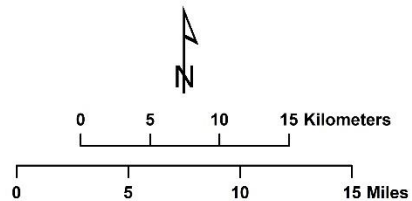
(i) *General description:* Unit 1 consists of 19,550 ha (48,310 ac) of lands in Charlotte, DeSoto, Hardee, and Sarasota Counties, Florida. This unit is located along the Peace River and its tributaries (e.g., Charlie Creek), south of CR–64, with the majority generally west of US–17. Land ownership within this unit consists of approximately 4,537 ha (11,212 ac) of State-owned land, 119 ha (295 ac) of County-owned land, 13 ha (32 ac) of locally owned land, 14,087 ha (34,810 ac) of private and other lands, and 793 ha (1,960 ac) of land of unidentified ownership. The largest land holding within this unit is the RV Griffin Reserve. Other smaller conservation lands also occur within this unit.

(ii) Map of Unit 1 follows:

Critical Habitat Units for Florida Bonneted Bat (*Eumops floridanus*)
Unit 1: Peace River and Surrounding Areas,
Hardee, DeSoto, Sarasota and Charlotte Counties, Florida



Critical Habitat

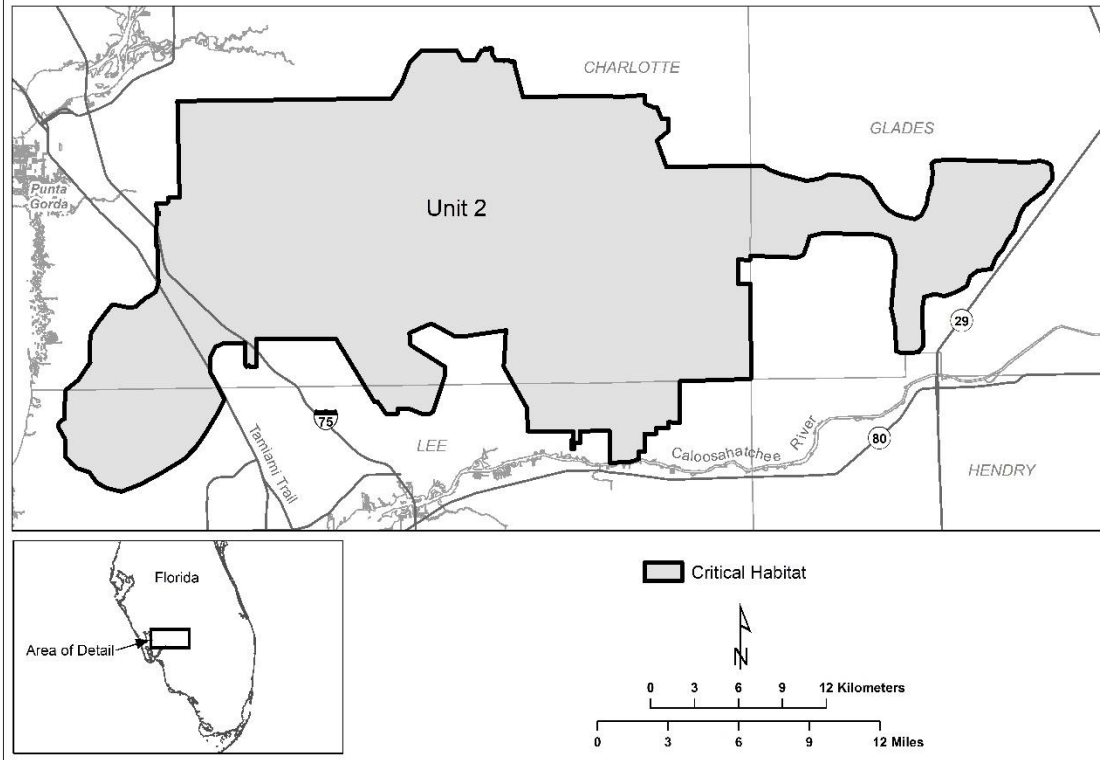


(7) Unit 2: Babcock-Webb Wildlife Management Area, Babcock Ranch, and surrounding areas; Charlotte, Lee, and Glades Counties, Florida.

(i) *General description:* Unit 2 consists of 97,505 hectares (ha) (240,941 acres (ac)) of lands in Charlotte, Lee, and Glades Counties, Florida. The majority of Unit 2 is located in Charlotte County, east of I-75; other portions are in northern Lee and western Glades Counties. Land ownership within this unit consists of approximately 1 ha (3 ac) of Federal land, 61,128 ha (151,050 ac) of State-owned land, 3,724 ha (9,203 ac) of County-owned land, 8 ha (21 ac) of locally owned land, 32,001 ha (79,077 ac) of private and other lands, and 642 ha (1,587 ac) of land of unidentified ownership. The largest land holdings within this unit are Babcock-Webb Wildlife Management Area and Babcock Ranch Preserve; other smaller conservation lands also occur within this unit.

(ii) Map of Unit 2 follows:

Critical Habitat Units for Florida Bonneted Bat (*Eumops floridanus*)
Unit 2: Babcock-Webb WMA, Babcock Ranch, and Surrounding Areas,
Charlotte, Glades and Lee Counties, Florida

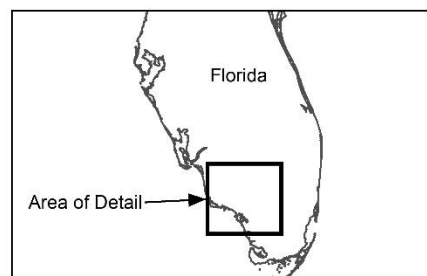
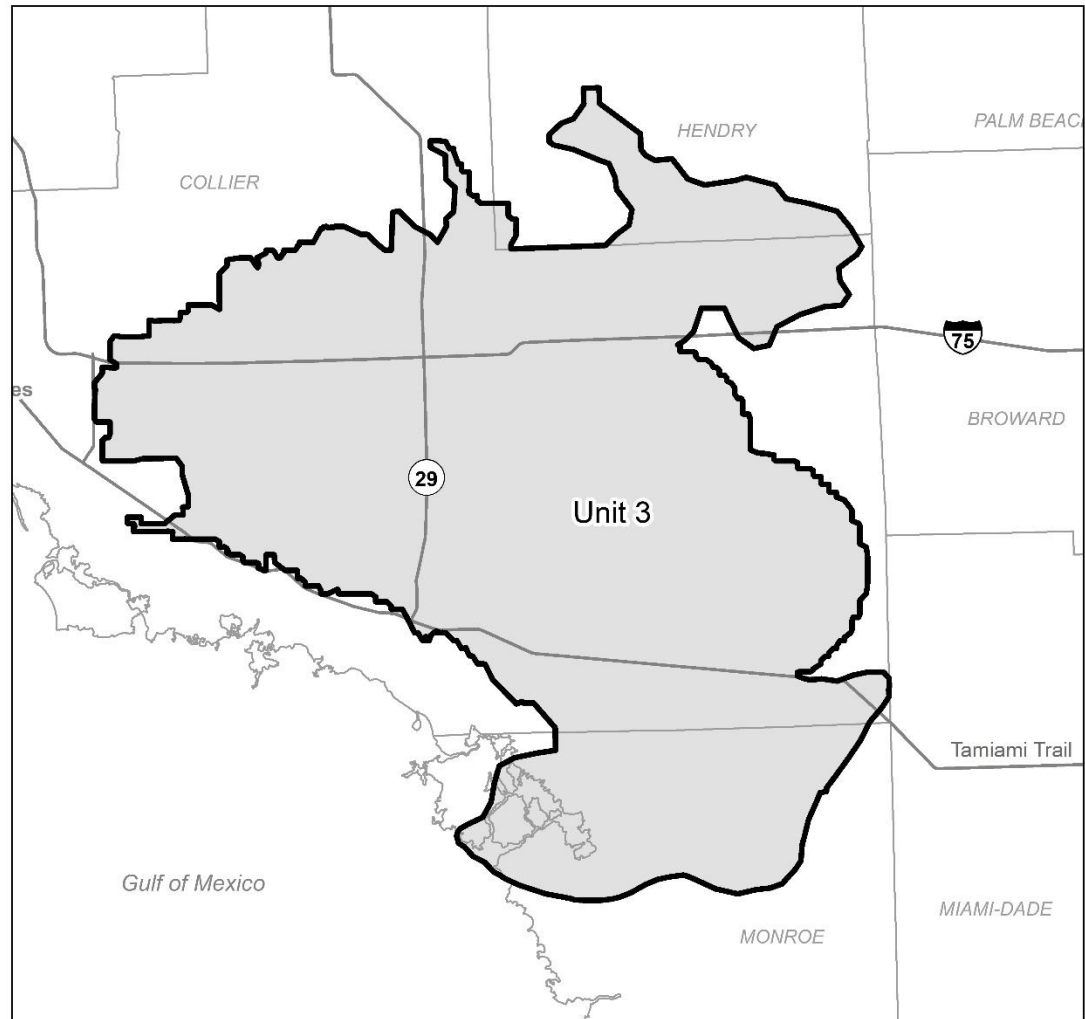


(8) Unit 3: Big Cypress and surrounding areas; Collier, Monroe, and Hendry Counties, Florida.

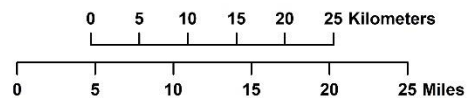
(i) *General description:* Unit 3 consists of 366,833 ha (906,462 ac) of lands in Collier, Monroe, and Hendry Counties, Florida. The majority of Unit 3 is located in Collier County, south of I-75; the remainder occurs in southern Hendry County and mainland portions of Monroe County. Land ownership within this unit consists of approximately 250,733 ha (619,573 ac) of Federal land, 10,527 ha (26,012 ac) of Tribal land, 61,869 ha (152,882 ac) of State-owned land, 3,384 ha (8,362 ac) of County-owned land, 173 ha (427 ac) of locally owned land, 38,227 ha (94,460 ac) of private and other lands, and 1,920 ha (4,745 ac) of land of unidentified ownership. The largest land holdings within Unit 3 are Big Cypress National Preserve, Picayune Strand State Forest, Fakahatchee Strand Preserve State Park, Everglades National Park, and Florida Panther National Wildlife Refuge. Other smaller conservation lands also occur within this unit.

(ii) Map of Unit 3 follows:

Critical Habitat Units for Florida Bonneted Bat (*Eumops floridanus*)
Unit 3: Big Cypress and Surrounding Areas,
Collier, Hendry and Monroe Counties, Florida



 Critical Habitat

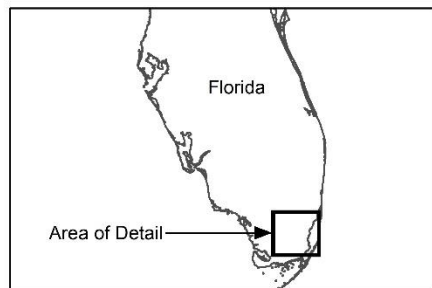
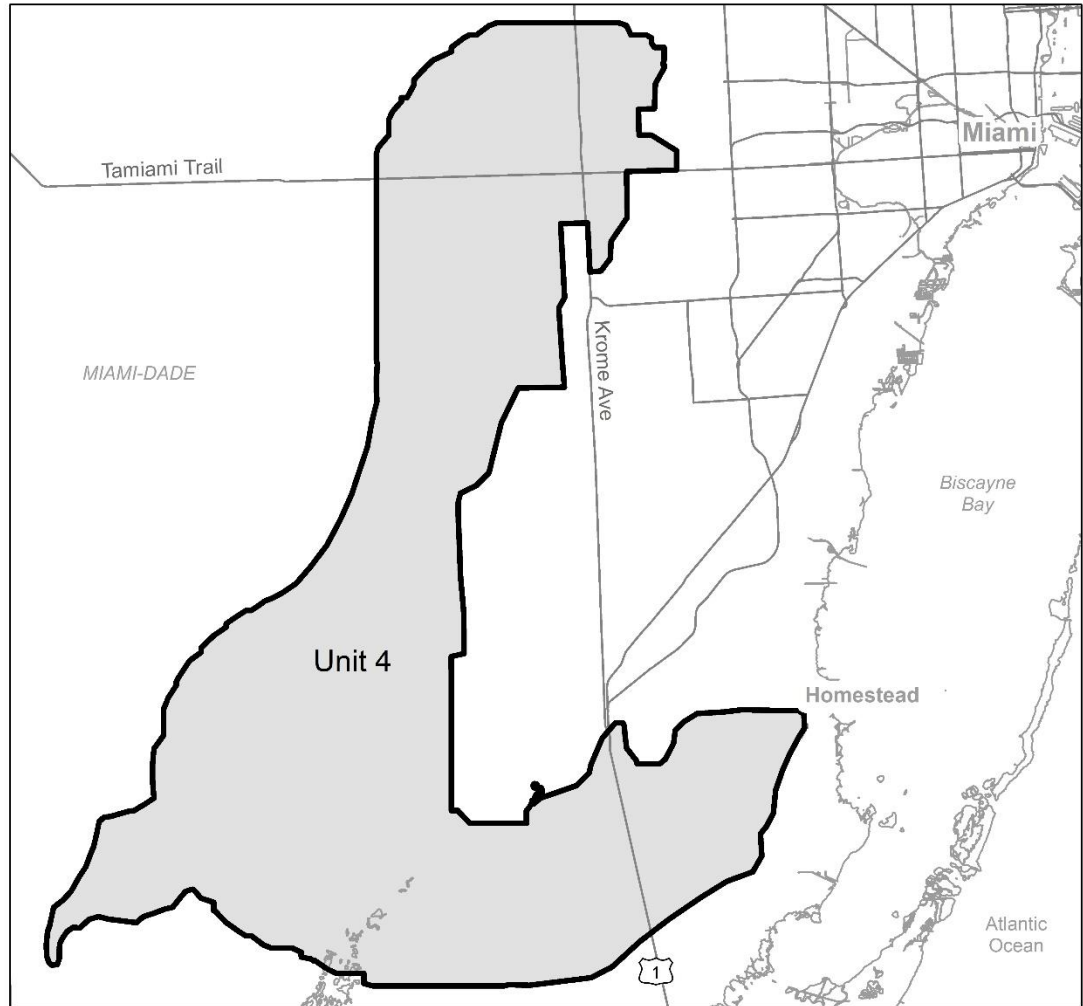


(9) Unit 4: Miami-Dade Natural Areas; Miami-Dade County, Florida.

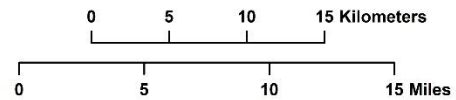
(i) *General description:* Unit 4 consists of 114,372 ha (282,620 ac), most of which are conservation lands and occur west of the Florida Turnpike, in Miami-Dade County, Florida. Land ownership within this unit consists of approximately 71,385 ha (176,395 ac) of Federal land, 326 ha (805 ac) of Tribal land, 26,159 ha (64,639 ac) of State-owned land, 4,210 ha (10,404 ac) of County-owned land, 114 ha (281 ac) of locally owned land, 11,496 ha (28,408 ac) of private and other lands, and 683 ha (1,688 ac) of land of unidentified ownership. The largest land holding within this unit is Everglades National Park; other smaller conservation lands also occur within this unit.

(ii) Map of Unit 4 follows:

Critical Habitat Units for Florida Bonneted Bat (*Eumops floridanus*)
Unit 4: Miami-Dade Natural Areas,
Miami-Dade County, Florida



 Critical Habitat



* * * * *

Aurelia Skipwith

Director, U.S. Fish and Wildlife Service.

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